AEB-GM45

Intel GM45, Mini-ITX

User's Manual

Rev.01, Sep. 2009

Statement

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All product specifications are subject to change without prior notice.

Packing List

- ☐ 1 x System board
- ☐ 1 x Driver CD (Include user's manual)
- ☐ 1 x I/O Shield
- ☐ 1 x Serial ATA data cable
- ☐ 1 x RS-232 cable(1 Port)
- ☐ 1 x USB cable(2 Port)

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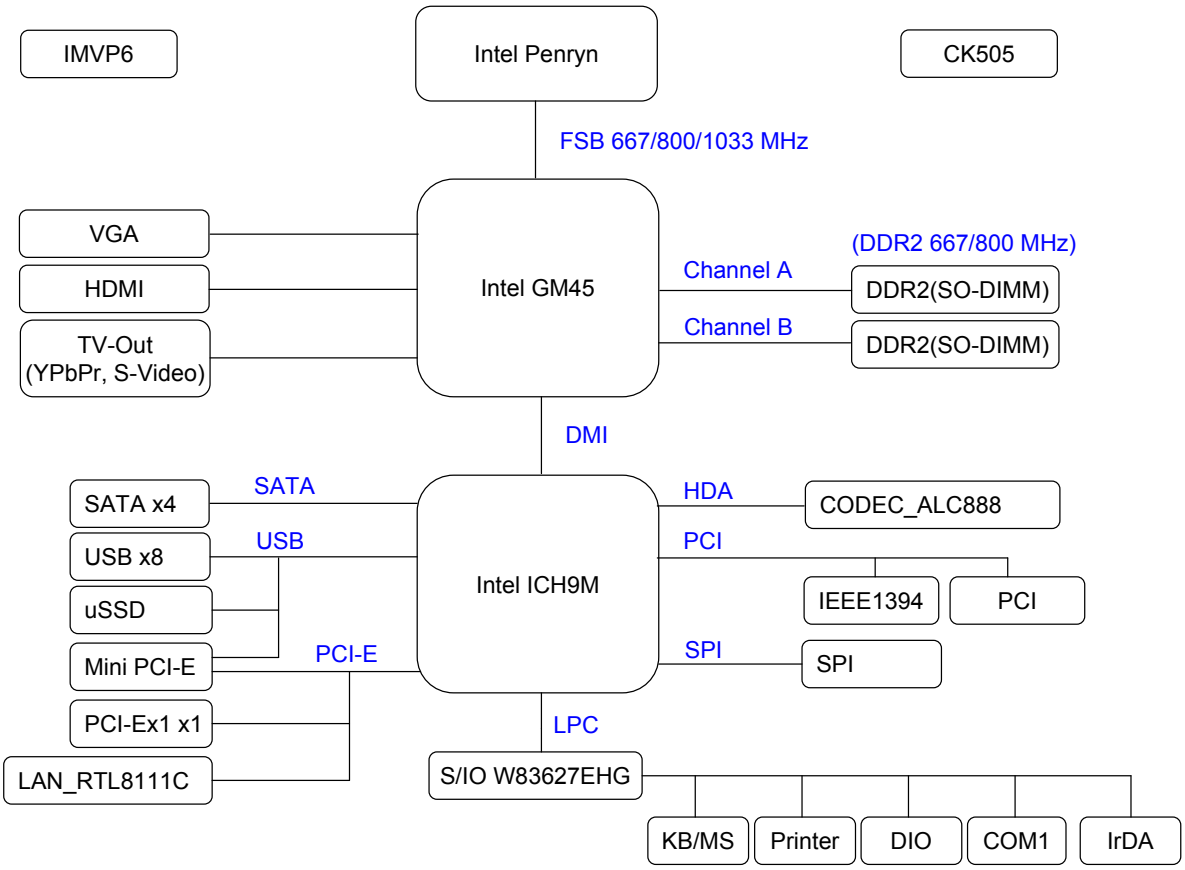
Chapter 1 Product Information

This chapter introduces the product features, jumper and connector information.

1.1 Block Diagram

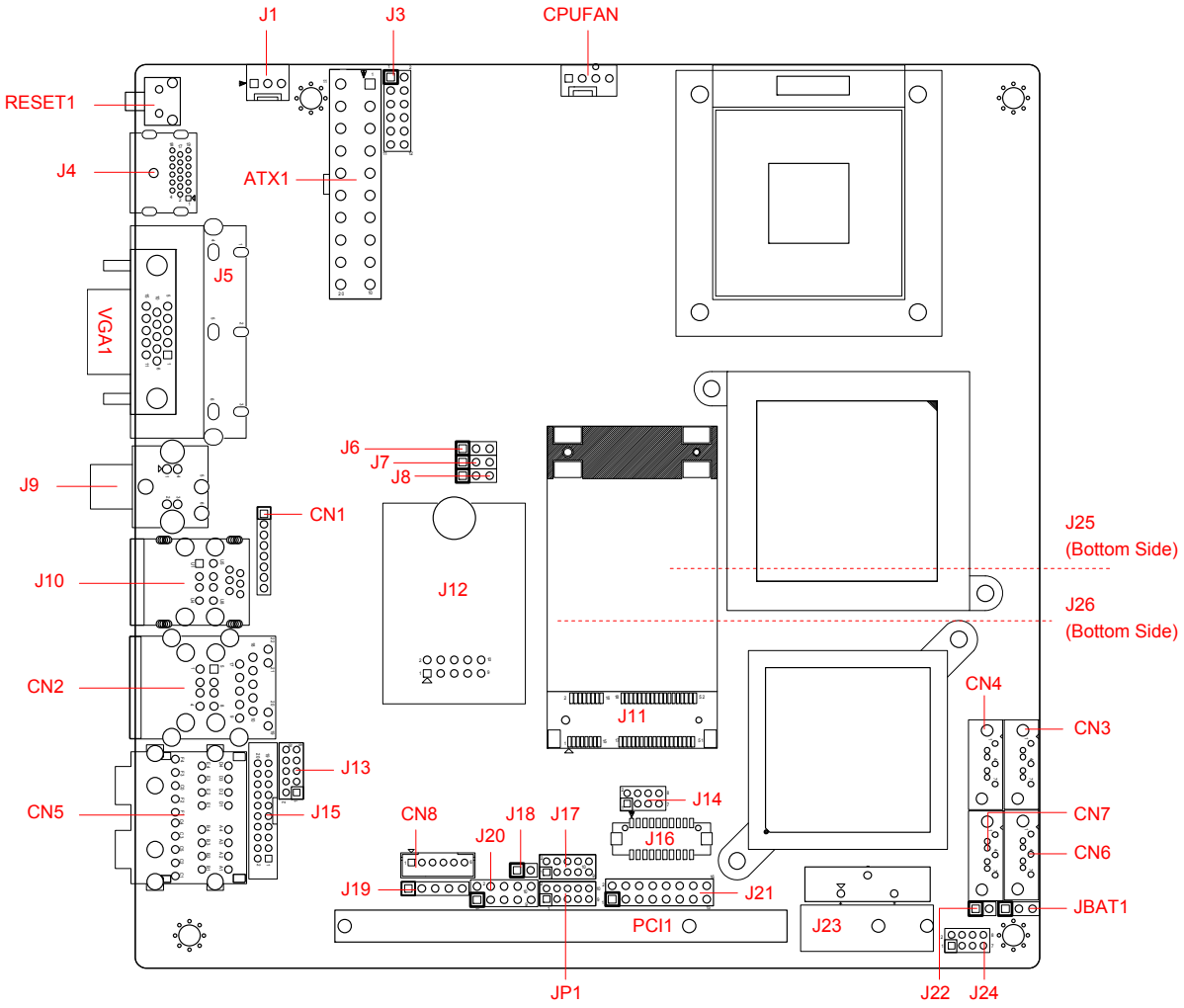


1.2 Features

System Processor / Chipset	Processor	Intel Socket-P processor, Intel Pentium Dual Core and Celeron mobile processors on 45 nm, Intel Celeron T1700, T1600, 585 and 575 processors on 65 nm
	FSB	667/800/1066 MHz
	Chipset	Intel GM45/GL40 + ICH9M
	BIOS	AWARD 16Mb SPI
Memory	Technology	DDR2 667/800 SDRAM
	Max. Capacity	Up to 4GB
	Socket	2 x SO-DIMM (Bottom)
Display	Chipset	Intel GM45 integrated GMA4500MHD
	VRAM	Intel DVMT 5.0
	VGA Resolution	VGA: Up to QXGA
	HDMI Resolution	Video support for CEA modes 480i/p, 576i/p, 720p, 1080i/p and PC modes though dot clock
	TV-Out	HDTV graphics mode support
	Dual Display	VGA+LVDS, VGA+HDMI, TV+HDMI
Ethernet	Interface	10/100/1000 Mbps
	Controller	Realtek RTL8111C
Audio	Interface	High Definition Audio
	Controller	Realtek ALC888 HD CODEC
SATA	Max. Data Transfer Rates	300 MB/s
	Port	4
Expansion Slot	PCI-E x1	1
	PCI	1
	Mini PCI-E	1

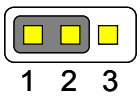
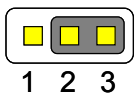
Internal Connecror	IEEE 1394A	1
	USB 2.0	4
	COM	1
	Audio Header	1
	IrDA	1
Rear I/O	VGA	1
	LAN	1
	USB 2.0	4
	IEEE 1394A	1
	Audio	6 (MIC.-In, Line-In, Line-Out, Cen-Out, LFE-Out, Surround-Out, Sidesurround1- Out), S/PDIF with RCA Jack
	HDMI	1
	S-Video	1
	Component Port	1 (Y, Pb, Pr)
Power	Type	ATX (20 Pin)
Watchdog Timer	Interval	Programmable 1 ~ 255 sec./min.
	Output	System reset
Environment	Operating Temp.	-5°C ~ 60°C (23°F ~ 140°F)
	Storage Temp.	-20°C ~ 80°C (-4°F ~ 176°F)
	Relative Humidity	0%~ 95% (non-condensing)
Form Factor	Dimension (L x W)	Mini-ITX (170mm x 170mm) (6.69” x 6.69”)

1.3 PCB Layout

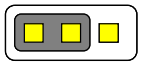
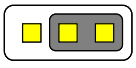
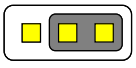
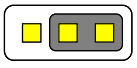
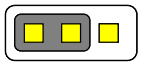
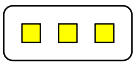
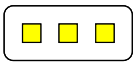
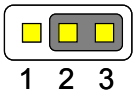
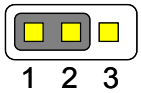
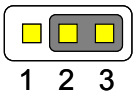
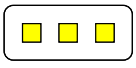
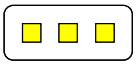


1.4 Jumper Setting

JBAT1：CMOS Clear

Pin No.	1-2	2-3
Function	Normal Operation (Default)	Clear CMOS Contents
Jumper Setting		

J6, J7, J8：FSB Frequency Select

Frequency	By CPU (Default)	667	800	1066
J6				
J7				
J8				

1.5 Connector Function List

Connector	Function	Note
ATX1	ATX Power 20 Pin Connector	
CN1	IEEE1394A Internal Connector	
CN2	RJ-45 and USB x2 Connector	
CN3,CN4,CN6, CN7	SATA Connector	
CN5	Audio Connector	
CN8	Internal Keyboard and Mouse Connector	
CPUFAN	CPU Fan 4Pin Connector	
J1	System Fan 3Pin Connector	
J3	+3.3V, +5V, +12V Connector	
J4	HDMI Connector	
J5	Component (Y, Pb, Pr) Connector	
J9	S-Video and S/PDIF Connector	
J10	IEEE1394A and USBX2 Connector	
J11	Mini PCI-E Connector	
J12	Internal USB Connector (for uSSD)	
J13	Front Panel Audio Connector	
J14	Internal USB Connector	
J15	Audio 7.1 Channels Connector	
J17	Internal COM1 Connector	
J18	Auxiliary Thermal Sensor Connector	
J19	IR Connector	
J21	Front Panel Connector	
J23	Mini PCI-E Slot	
J24	Internal USB Connector	
J25, J26	DDR2 SO-DIMM Connector (Bottom)	
JP1	Digital IO Connector	
PCI1	PCI Slot	
RESET1	Reset Button	
VGA1	CRT Connector	

1.6 Internal Connector Pin Define

CN1：IEEE1394A Connector with Pin-header (2.0 mm)

Pin No.	Signal
1	+12V
2	Ground
3	TPB1-
4	TPB1+
5	TPA1-
6	TPA1+
7	Ground
8	Ground

CN8：Internal Keyboard and Mouse Connector with Box-header (2.0 mm)

Pin No.	Signal
1	+5V
2	MDAT
3	MCLK
4	KDAT
5	KCLK
6	Ground

CPUFAN：CPU 4Pin FAN Connector

Pin No.	Signal
1	Ground
2	Fan Power (+12V)
3	Speed Sense
4	Control

J1：System FAN 3Pin Connector

Pin No.	Signal
1	Ground
2	Fan Power (+12V)
3	Speed Sense

J3：Power Connector with Pin-header (2.54 mm)

Pin No.	Signal	Pin No.	Signal
1	+12V	2	+12V
3	Ground	4	Ground
5	+5V	6	+5V
7	Ground	8	Ground
9	+3.3V	10	+3.3V
11	Ground	12	NC

J11：Mini PCI-E Connector

Pin No.	Signal	Pin No.	Signal
1	WAKE#	2	+3.3V
3	Reserved	4	Ground
5	Reserved	6	+1.5V
7	CLKREQ#	8	Reserved
9	Ground	10	Reserved
11	REFCLK-	12	Reserved
13	REFCLK+	14	Reserved
15	Ground	16	Reserved
17	Reserved	18	Ground
19	Reserved	20	Reserved
21	Ground	22	PERST#
23	PER_N0	24	+3V_AUX
25	PER_P0	26	Ground
27	Ground	28	+1.5V
29	Ground	30	SMB_CLK
31	PET_N0	32	SMB_DATA
33	PET_P0	34	Ground
35	Ground	36	USB_D-
37	Reserved	38	USB_D+
39	Reserved	40	Ground
41	Reserved	42	LED_WWAN#
43	Reserved	44	LED_WLAN#
45	Reserved	46	LED_WPAN#
47	Reserved	48	+1.5V
49	Reserved	50	Ground
51	Reserved	52	+3.3V

J12：Internal USB Connector (for uSSD)

Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	NC
3	USB DATA8-	4	NC
5	USB DATA8+	6	NC
7	Ground	8	NC
9	NC	10	NC

J13：Front Panel Audio Connector with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	NC
3	USB DATA8-	4	NC
5	USB DATA8+	6	NC
7	Ground	8	NC
9	NC	10	NC

J14：Internal USB Connector with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	Ground
3	USB DATA6-	4	USB DATA7+
5	USB DATA6+	6	USB DATA7-
7	Ground	8	USB Power (+5V)

J15：Audio 7.1 Channels Connector with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	Line1-L_OUT	2	Line1-JD
3	Line1-R_OUT	4	Ground
5	Front-L_OUT	6	Front-JD
7	Front-R_OUT	8	Ground
9	CEN_OUT	10	CEN_JD
11	LFE_OUT	12	Ground
13	Surround-L_OUT	14	Surround-JD
15	Surround-R_OUT	16	Ground
17	Side Surround-L_OUT	18	Side Surround-JD
19	Side Surround-R_OUT	20	Ground

J17：Serial Port with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	RI/+5V/+12V
9	Ground	10	RI/+5V/+12V

J18：Auxiliary Thermal Sensor Connector (2.54 mm)

Pin No.	Signal
1	AUXTIN
2	Ground

J19：IR Connector with Pin-header (2.54 mm)

Pin No.	Signal
1	+5V
2	NC
3	IR-RX
4	Ground
5	IR-TX

J21：Front Panel Connector with Pin-header (2.54mm)

Pin No.	Signal	Pin No.	Signal
1	Power LED+ [+5V (330 Ohm)]	2	HDD LED+ [+5V (330 Ohm)]
3	Power LED- (Ground)	4	HDD LED-
5	Standby LED+ (+3.3V_Dual)	6	Power Switch+
7	Speaker Out+ (+5V)	8	Power Switch- (Ground)
9	+5V_Dual (470 Ohm)	10	SYSRESET+
11	Speaker Out-	12	SYSRESET- (Ground)
13	S1_LED+ [+5V (330 Ohm)]	14	QRT
15	S1_LED-	16	Ground

J24：Internal USB Connector with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	USB Power (+5V)	2	NC
3	USB DATA4-	4	USB DATA5+
5	USB DATA4+	6	USB DATA5-
7	Ground	8	USB Power (+5V)

JP1：Digital Connector with Pin-header (2.0 mm)

Pin No.	Signal	Pin No.	Signal
1	Ground	2	+5V
3	Digital IO In 0	4	Digital IO Out 0
5	Digital IO In 1	6	Digital IO Out 1
7	Digital IO In 2	8	Digital IO Out 2
9	Digital IO In 3	10	Digital IO Out 3

Chapter 2 BIOS Setup

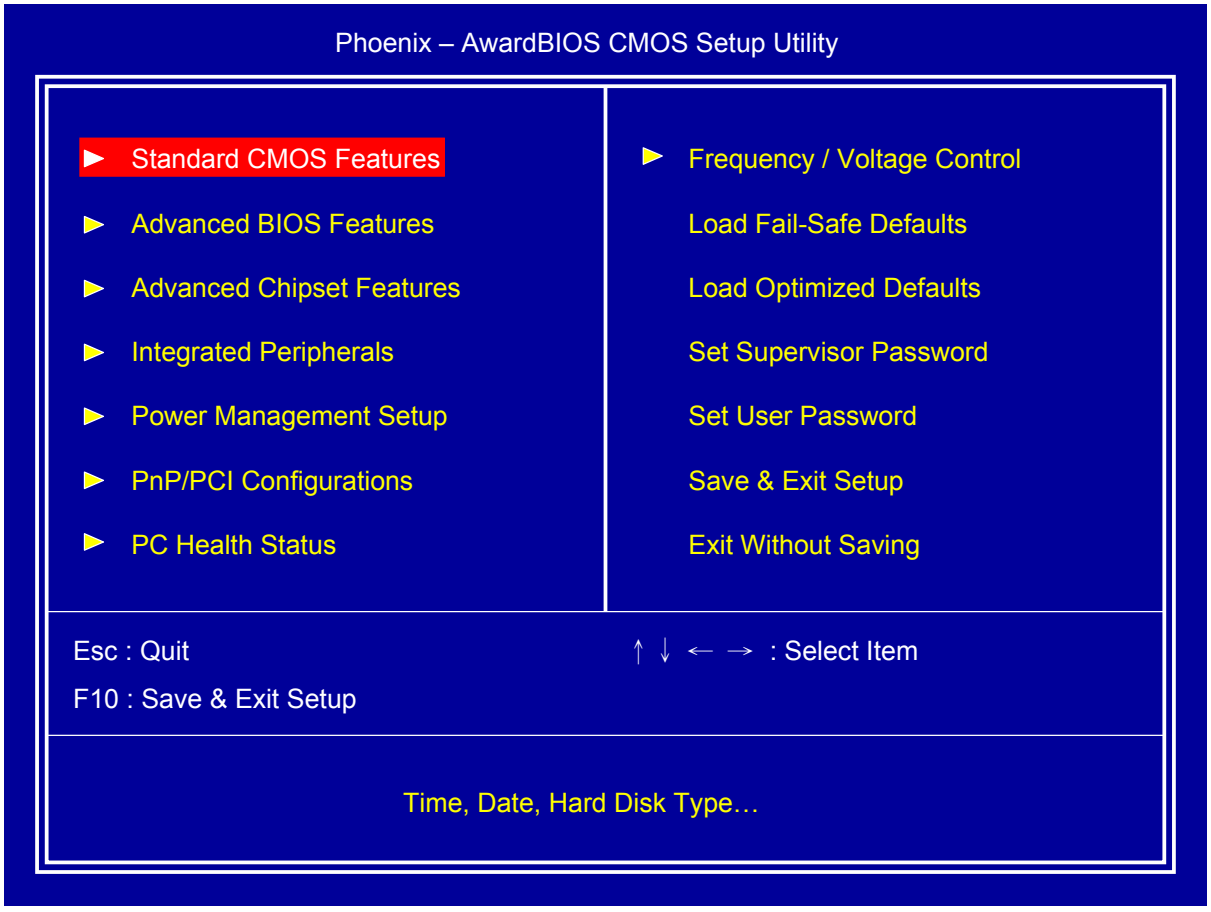
This chapter introduces BIOS setup information.

Power on or reboot the system board, when screen appear
“Press DEL to enter SETUP“, Press <DEL> key to enter BIOS SETUP Utility.

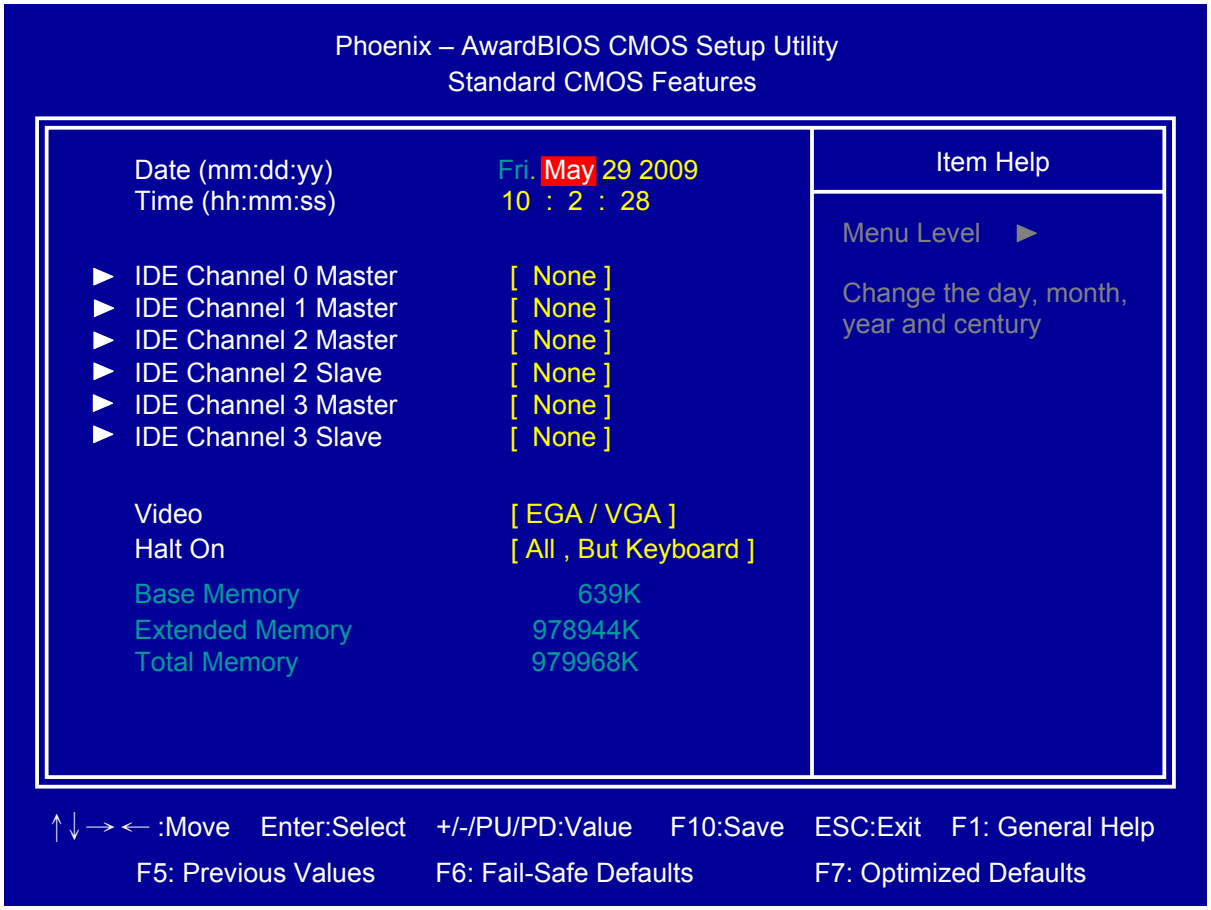
Note: The BIOS configuration for reference only, it may subject to change without prior notice.

2.1 Main Menu

Please use arrow keys to select item, then press <Enter> key to accept or enter the sub-menu.



2.2 Standard CMOS Features


Phoenix – AwardBIOS CMOS Setup Utility
Standard CMOS Features
Date (mm:dd:yy) Fri. May 29 2009
Time (hh:mm:ss) 10 : 2 : 28
IDE Channel 0 Master [None]
IDE Channel 1 Master [None]
IDE Channel 2 Master [None]
IDE Channel 2 Slave [None]
IDE Channel 3 Master [None]
IDE Channel 3 Slave [None]
Video [EGA / VGA]
Halt On [All , But Keyboard]
Base Memory 639K
Extended Memory 978944K
Total Memory 979968K
Item Help
Menu Level ►
Change the day, month, year and century
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ **Date**

Set system date.

☐ **Time**

Set system time.

☐ **IDE Channel 0/1/2/3 Master**

Press <Enter> for IDE device automatic detection.

☐ **IDE Channel /2/3 Slave**

Press <Enter> for IDE device automatic detection.

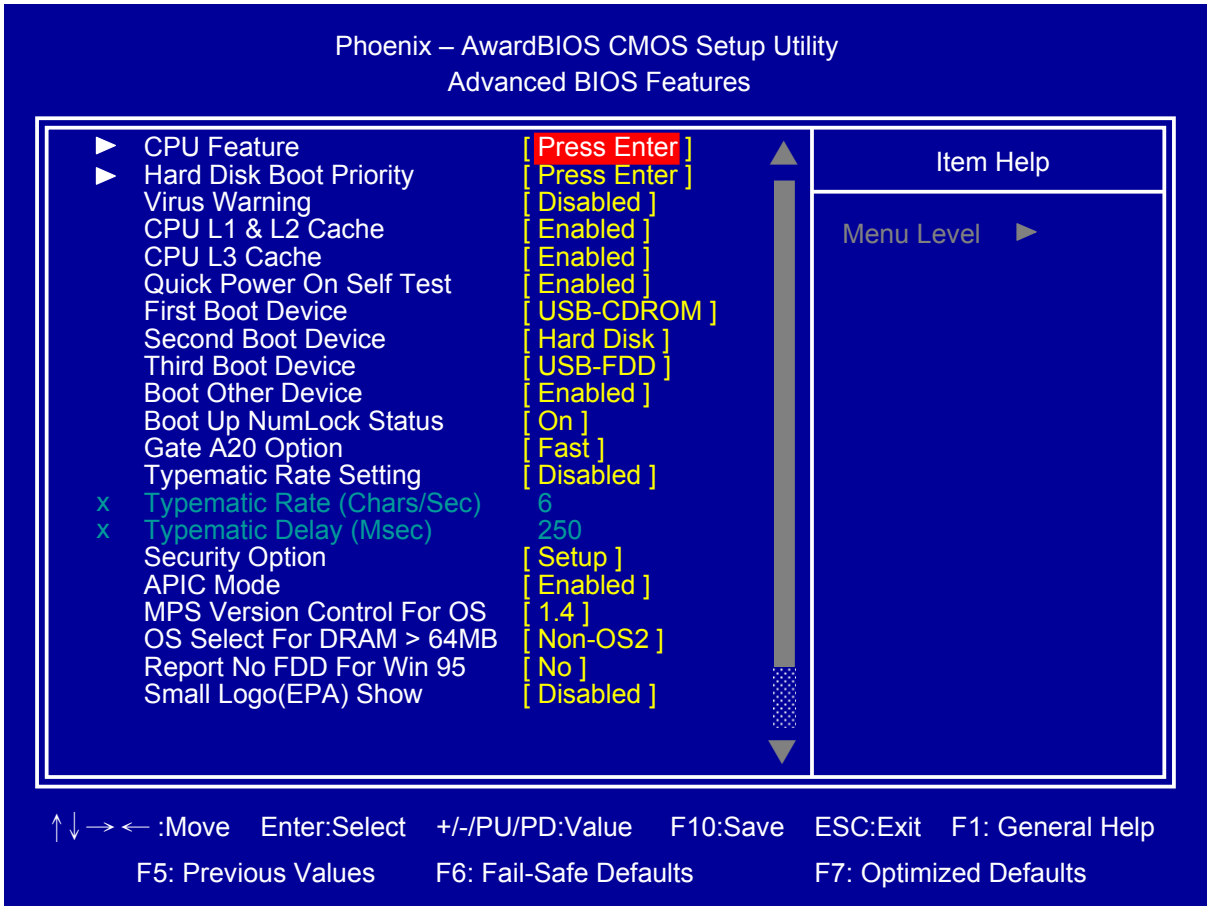
☐ **Video**

Select Video device type.

☐ **Halt on**

Select stop procedure or ignore when error detected during POST (Power On Self Test).

2.3 Advanced BIOS Features


Phoenix – AwardBIOS CMOS Setup Utility
Advanced BIOS Features
► CPU Feature [Press Enter]
► Hard Disk Boot Priority [Press Enter]
Virus Warning [Disabled]
CPU L1 & L2 Cache [Enabled]
CPU L3 Cache [Enabled]
Quick Power On Self Test [Enabled]
First Boot Device [USB-CDROM]
Second Boot Device [Hard Disk]
Third Boot Device [USB-FDD]
Boot Other Device [Enabled]
Boot Up NumLock Status [On]
Gate A20 Option [Fast]
Typematic Rate Setting [Disabled]
x Typematic Rate (Chars/Sec) 6
x Typematic Delay (Msec) 250
Security Option [Setup]
APIC Mode [Enabled]
MPS Version Control For OS [1.4]
OS Select For DRAM > 64MB [Non-OS2]
Report No FDD For Win 95 [No]
Small Logo(EPA) Show [Disabled]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ **CPU Feature**

Press <Enter> to select CPU parameter.

☐ **Hard Disk Boot Priority**

Press <Enter> to select Hard Disk boot device priority.

☐ **Virus Warning**

Select “Virus Warning” Enabled/Disabled.

☐ **CPU L1 & L2 Cache**

Select “CPU L1 & L2 Cache” Enabled/Disabled.

☐ **CPU L3 Cache**

Select “CPU L3 Cache” Enabled/Disabled.

☐ **Quick Power On Self Test**

Select “Quick Power On Self Test” Enabled/Disabled.

☐ **First/Second/Third Boot Device**

Select boot device priority.

☐ **Boot Other Device**

Select “Boot Other Device” Enabled/Disabled.

☐ **Boot Up NumLock Status**

Select <NumLock> key ON/Off when system boot up.

☐ **Gate A20 Option**

Select Gate A20 controlled by Keyboard controller (Normal) or Port 92 (Fast).

☐ **Typematic Rate Setting**

Select “Typematic Rate Setting” Enabled to set,
Typematic Rate (Chars/Sec): Number of characters repeated in one second.
Typematic Delay (Msec): When holding one key, set the time between the first and second character displayed.

☐ **Security Option**

Select security mode,
Setup: Require password to permit BIOS setup utility.
System: Require password to permit boot-up and BIOS setup utility.

☐ **APIC Mode**

Select APIC (Advanced Programmable Interrupt Controller) Enabled/Disabled.

☐ **MPS Version Control For OS**

Select MPS (Multiprocessor Specification) Version 1.4 to added extended configuration tables to improve support for multiple PCI bus configurations and improve future expandability. It is also required for a secondary PCI bus to work without the need for a bridge. Select Version 1.1 for older Operating Systems.

☐ **OS Select For DRAM > 64M**

Select “OS2” only if you are running older version of IBM OS/2 Operating System with greater than 64MB of RAM on the system. Otherwise select “Non-OS/2” setting.

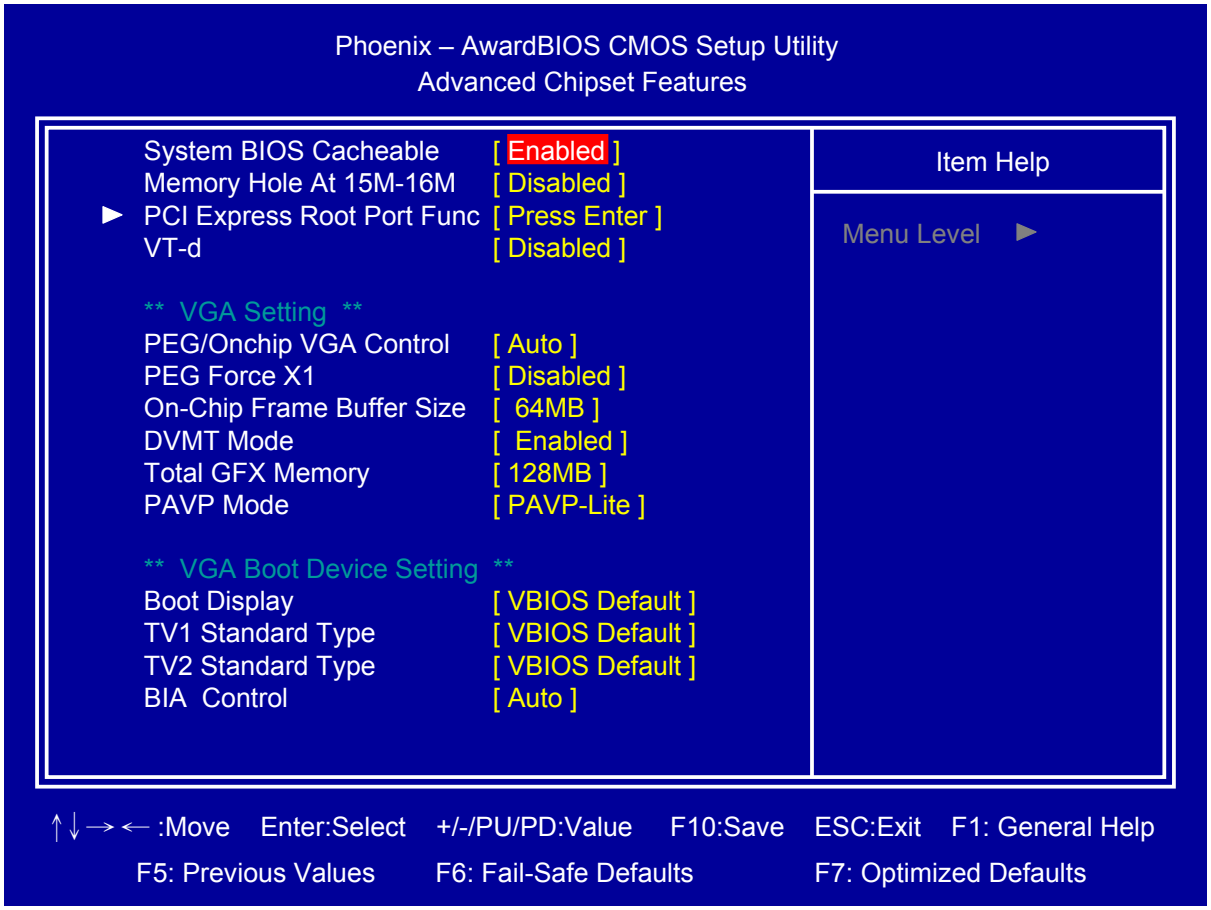
☐ **Report No FDD For WIN 95**

If running Windows 95/98 without floppy disk drive, select “Enabled” to release IRQ6. This is required to pass Windows 95/98's SCT test. If select “Disabled”, BIOS will not report missing floppy drive to Win95/98.

☐ **Small Logo(EPA) Show**

Select EPA (Environmental Protection Agency) Energy Star logo appears during the system boot-up process.

2.4 Advanced Chipset Features


Phoenix – AwardBIOS CMOS Setup Utility
Advanced Chipset Features
System BIOS Cacheable [Enabled]
Memory Hole At 15M-16M [Disabled]
PCI Express Root Port Func [Press Enter]
VT-d [Disabled]
** VGA Setting **
PEG/Onchip VGA Control [Auto]
PEG Force X1 [Disabled]
On-Chip Frame Buffer Size [64MB]
DVMT Mode [Enabled]
Total GFX Memory [128MB]
PAVP Mode [PAVP-Lite]
** VGA Boot Device Setting **
Boot Display [VBIOS Default]
TV1 Standard Type [VBIOS Default]
TV2 Standard Type [VBIOS Default]
BIA Control [Auto]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ System BIOS Cacheable

Select Enabled to caching of the system BIOS at F0000h-FFFFFh, resulting in better system performance. However, if any program is written to this memory area, the system error may result.

☐ Memory Hole At 15M-16M

Select Enabled to improve performance, certain space in memory can be reserved for ISA cards. The memory must be mapped into the memory space below 16 MB.

☐ PCI Express Root Port Func

Press <Enter> to setting PCI Express function.

☐ VT-d

Select VT-d(Virtualization Technology for Directed I/O) Enabled/Disabled.

☐ **PEG/Onchip VGA Control**

Select VGA control by PEG (PCI-Express Graphic) or onboard chipset.

☐ **PEG Force X1**

Select “PEG Force X1” Enabled/Disabled.

☐ **On-Chip Frame Buffer Size**

Select share system memory 32MB/64MB/128MB.

☐ **DVMT Mode**

DVMT (Dynamic Video Memory Technology) allowing the system to dynamically allocate memory resources according to the demands of the system at any point in time, that improve efficiency of the memory allocated to either system or graphics processor.

☐ **Total GFX Memory**

For Win XP, the MAX Value is base on system memory size, 512MB for 1GB DRAM, 768MB for 1.5GB to 2GB, 1GB fro above 2GB.

☐ **PAVP Mode**

PAVP (Protected Audio Video Path) is a feature to ensure a robust and secure content protection path for high-definition video playback including Blu-ray discs on the Microsoft Windows Vista operating system. PAVP ensures that computers supporting hardware-based decode acceleration are properly utilized in order to deliver smooth playback. In addition, PAVP reduces processor utilization by off-loading the video decode onto the chipset to free up the processor to perform other tasks.

PAVP implementations in Lite mode meet the industry content protection requirements and allow use of the chipset’s native hardware decode capabilities for best high definition media experience.

☐ **Boot Display**

Select boot display device type.

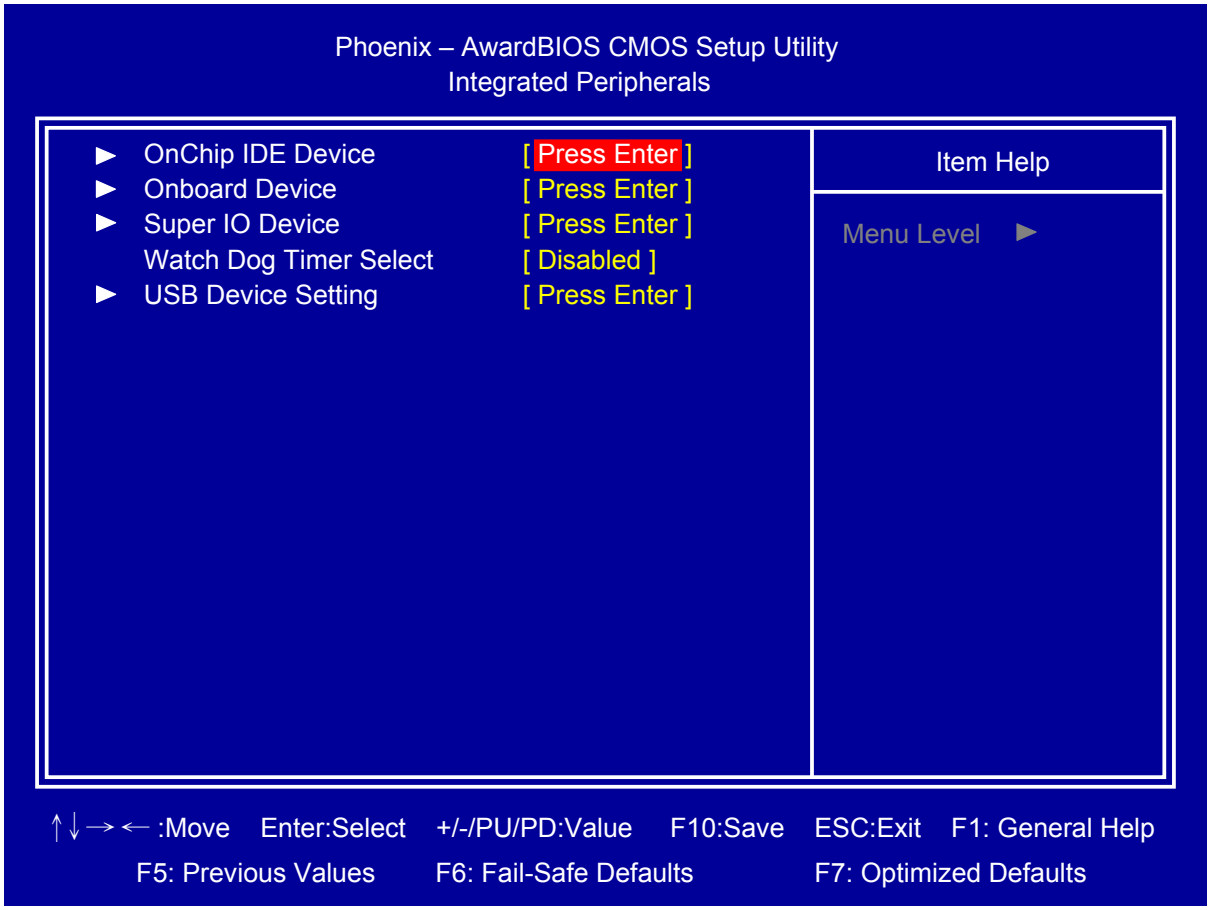
☐ **TV1/2 Standard Type**

Select TV standard type.

☐ BIA Control

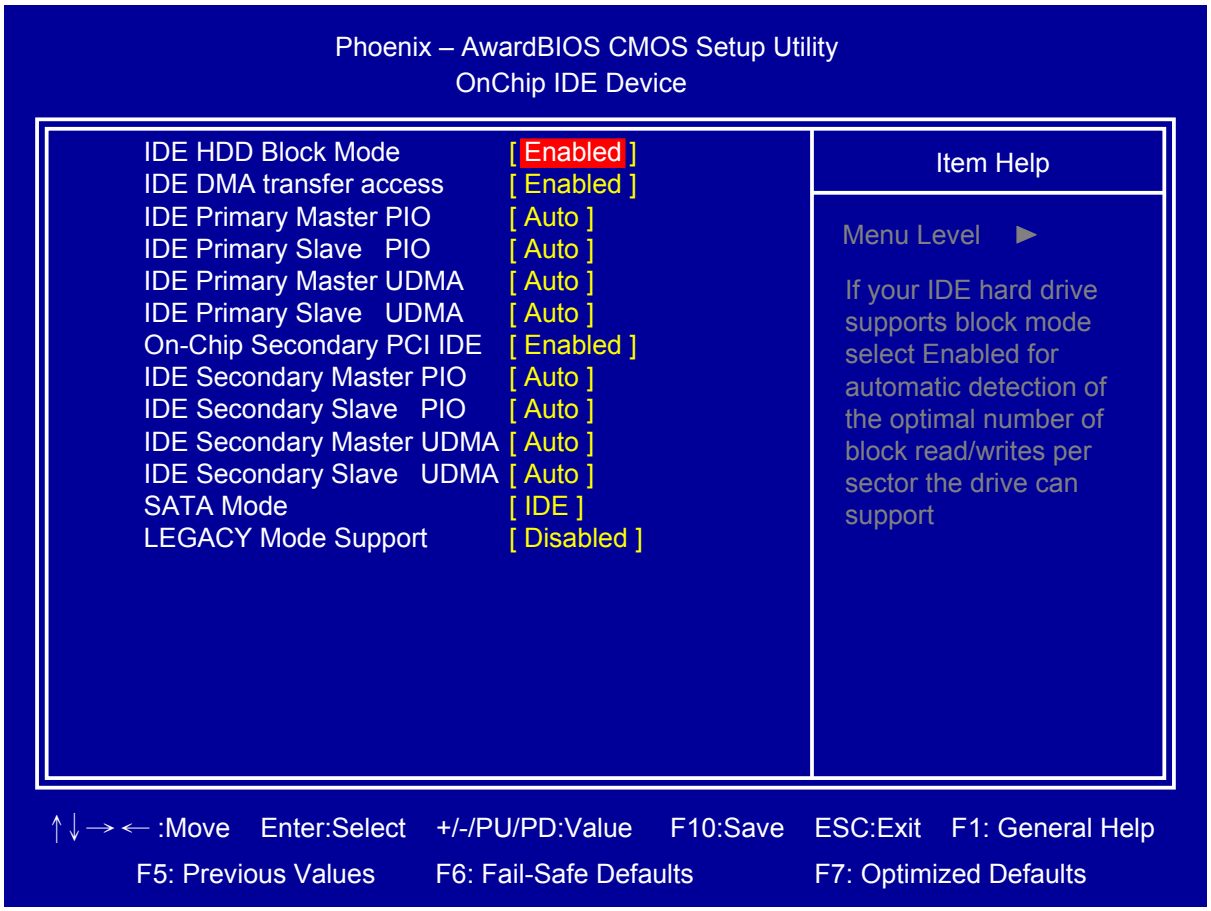
Select BIA (Backlight Image Adaptation) control to set power savings by dynamically brightening the color of a displayed image through modifications to a graphics color look-up table with a corresponding decrease in backlight intensity.

2.5 Integrated Peripherals


Phoenix – AwardBIOS CMOS Setup Utility
Integrated Peripherals
► OnChip IDE Device [Press Enter]
► Onboard Device [Press Enter]
► Super IO Device [Press Enter]
Watch Dog Timer Select [Disabled]
► USB Device Setting [Press Enter]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

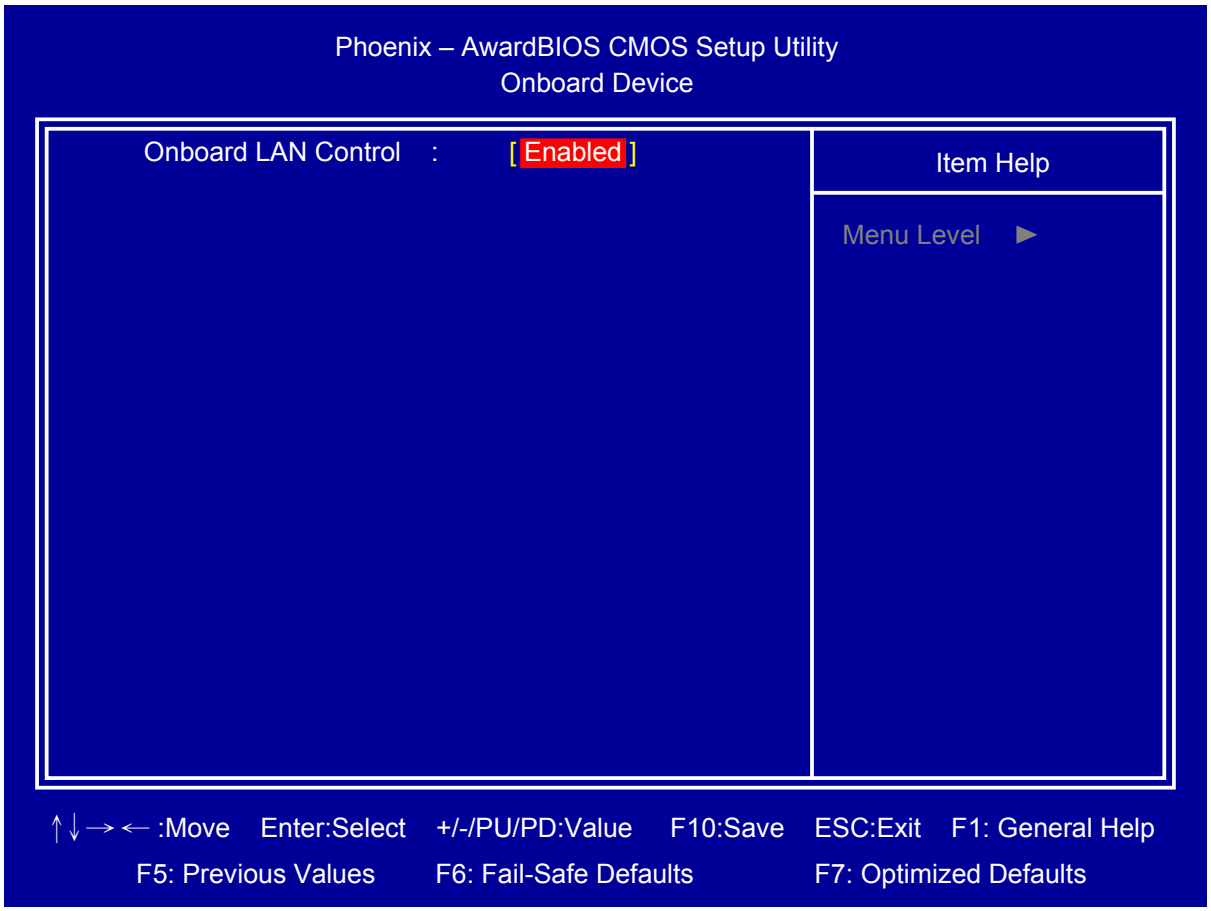
☐ OnChip IDE Device

Press <Enter> to set IDE and SATA device configuration.


Phoenix – AwardBIOS CMOS Setup Utility
OnChip IDE Device
IDE HDD Block Mode [Enabled]
IDE DMA transfer access [Enabled]
IDE Primary Master PIO [Auto]
IDE Primary Slave PIO [Auto]
IDE Primary Master UDMA [Auto]
IDE Primary Slave UDMA [Auto]
On-Chip Secondary PCI IDE [Enabled]
IDE Secondary Master PIO [Auto]
IDE Secondary Slave PIO [Auto]
IDE Secondary Master UDMA [Auto]
IDE Secondary Slave UDMA [Auto]
SATA Mode [IDE]
LEGACY Mode Support [Disabled]
Item Help
Menu Level ►
If your IDE hard drive supports block mode select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

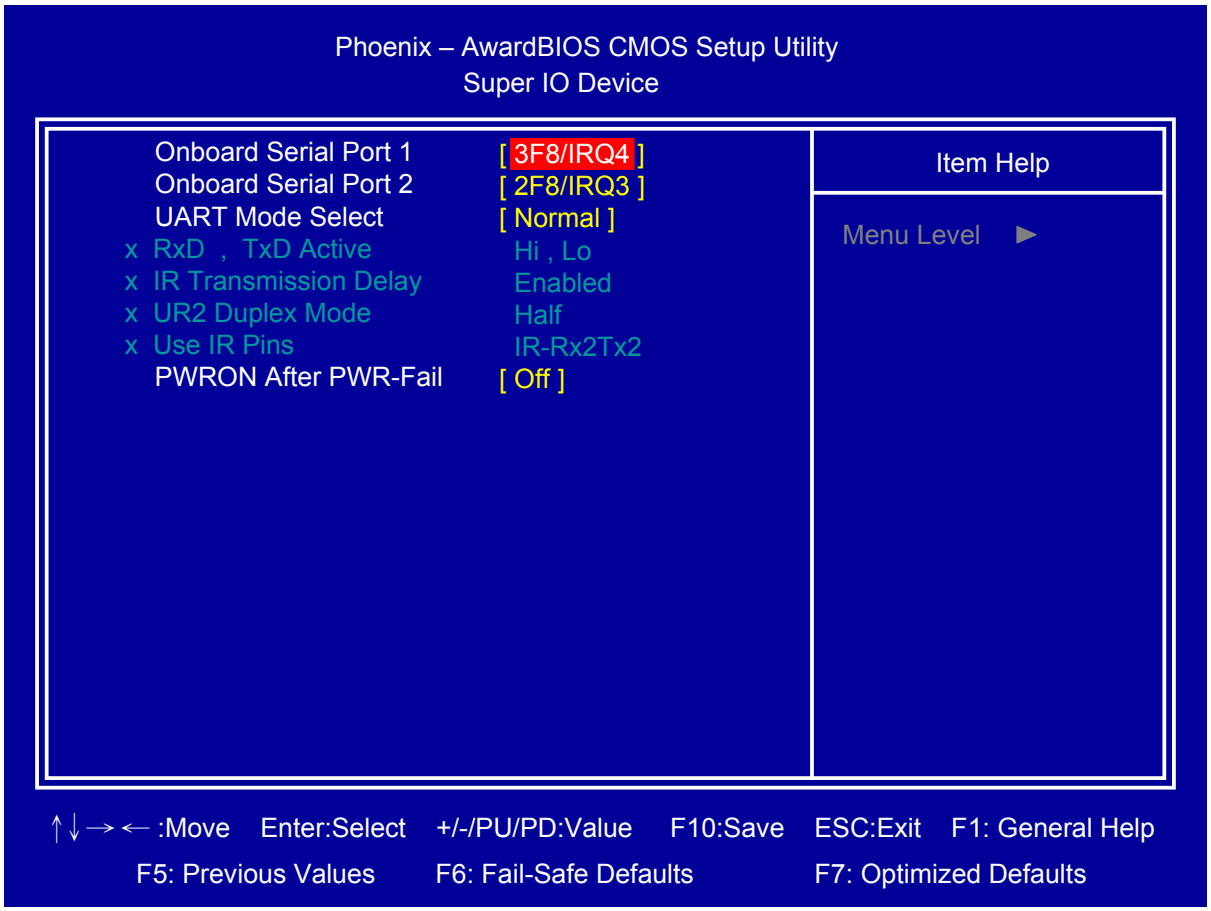
☐ Onboard Device

Press <Enter> to select Onboard LAN Enabled/Disabled.


Phoenix – AwardBIOS CMOS Setup Utility
Onboard Device
Onboard LAN Control : [Enabled]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ Super IO Device

Press <Enter> to select Serial and “PWRON After PWR-Fail” configuration.

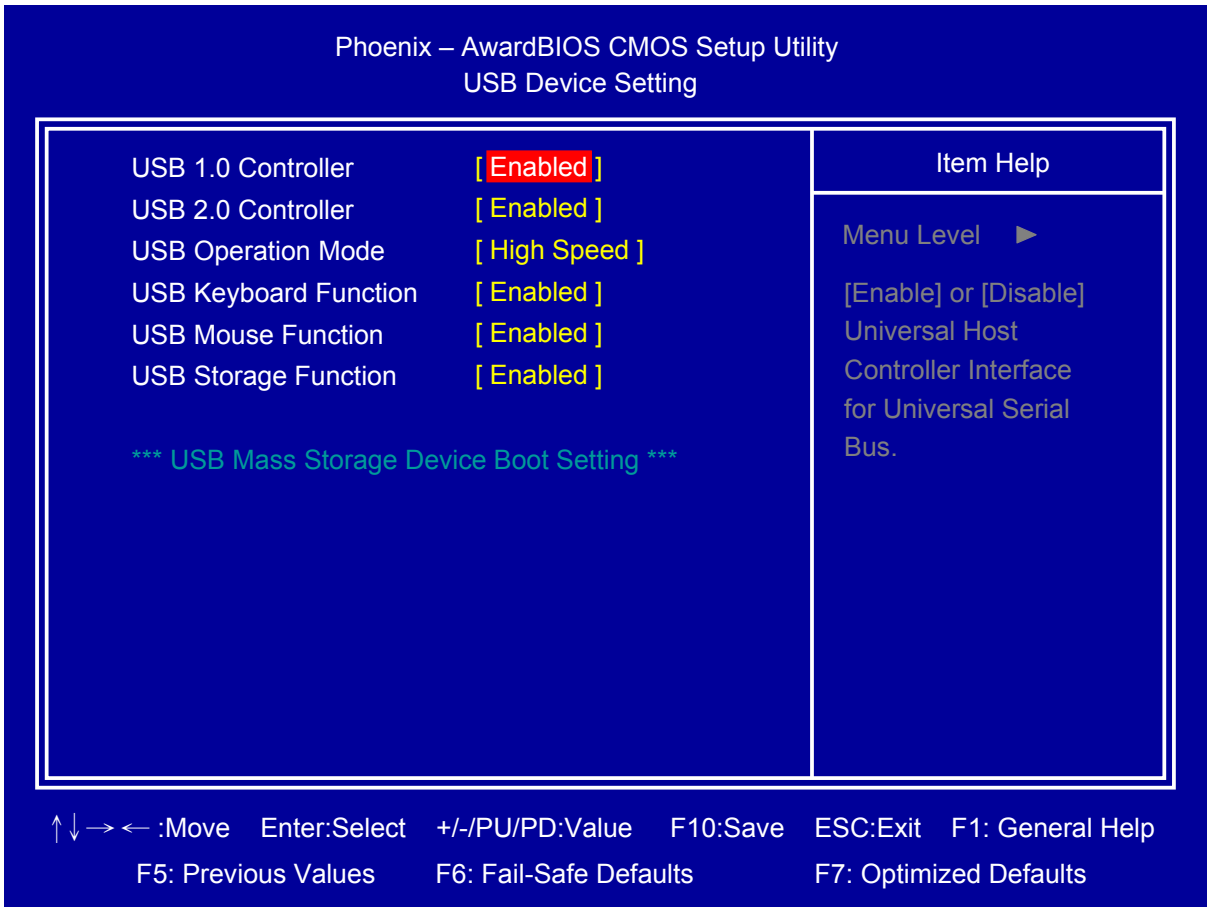

Phoenix – AwardBIOS CMOS Setup Utility
Super IO Device
Onboard Serial Port 1 [3F8/IRQ4]
Onboard Serial Port 2 [2F8/IRQ3]
UART Mode Select [Normal]
x RxD , TxD Active Hi , Lo
x IR Transmission Delay Enabled
x UR2 Duplex Mode Half
x Use IR Pins IR-Rx2Tx2
PWRON After PWR-Fail [Off]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ Watch Dog Timer Select

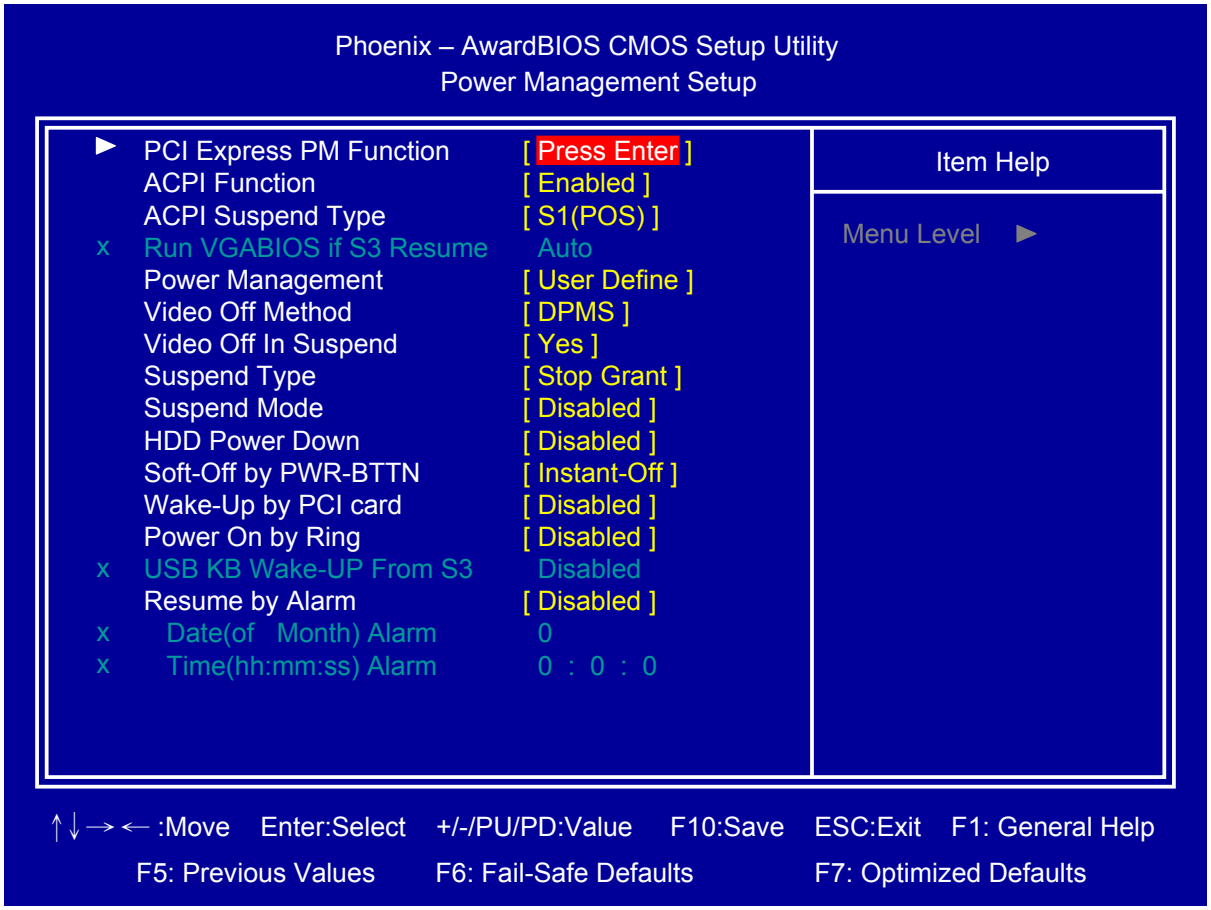
Select Watch dog Disabled or set timer value.

☐ USB Device Setting

Press <Enter> to select USB device configuration.

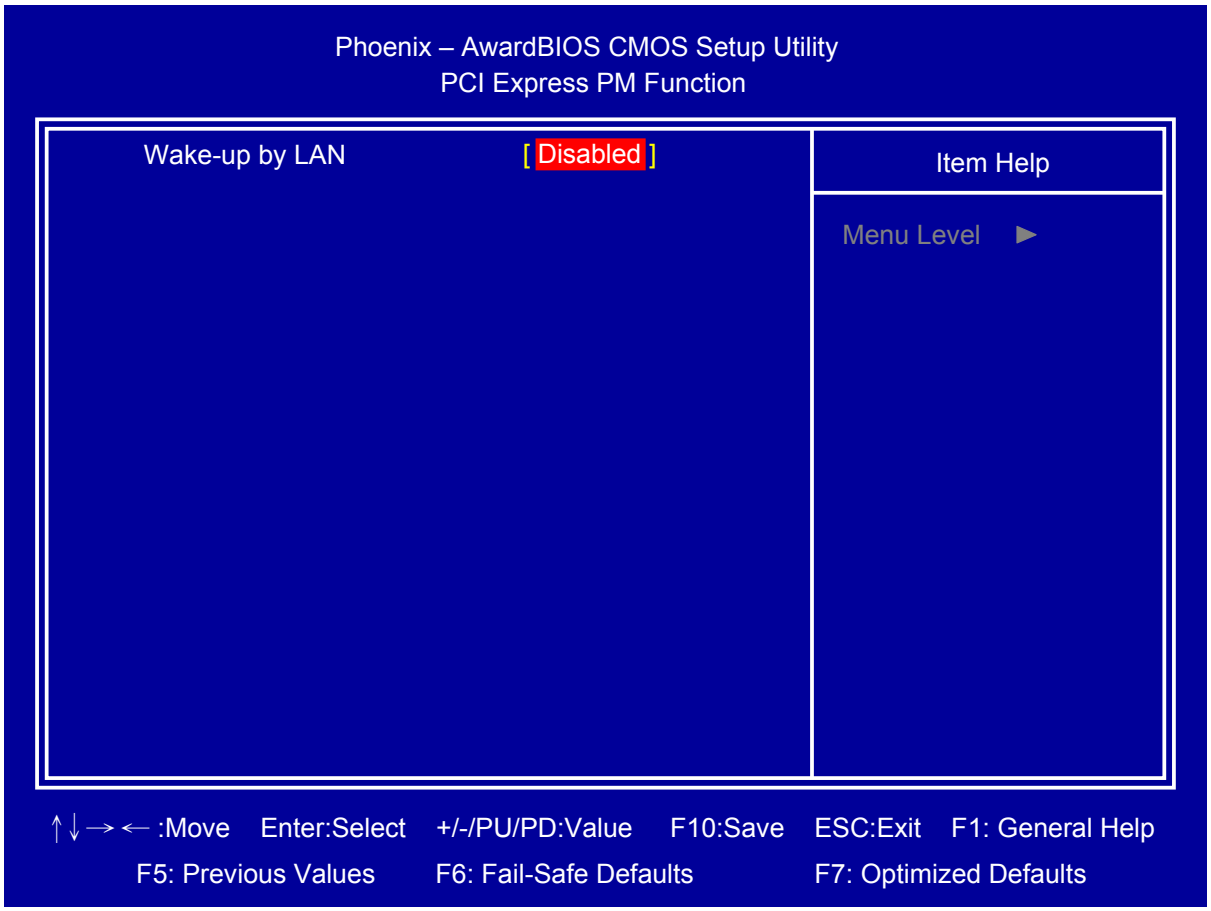

Phoenix – AwardBIOS CMOS Setup Utility
USB Device Setting
USB 1.0 Controller [Enabled]
USB 2.0 Controller [Enabled]
USB Operation Mode [High Speed]
USB Keyboard Function [Enabled]
USB Mouse Function [Enabled]
USB Storage Function [Enabled]
*** USB Mass Storage Device Boot Setting ***
Item Help
Menu Level ►
[Enable] or [Disable] Universal Host Controller Interface for Universal Serial Bus.
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

2.6 Power Management Setup


Phoenix – AwardBIOS CMOS Setup Utility
Power Management Setup
PCI Express PM Function [Press Enter]
ACPI Function [Enabled]
ACPI Suspend Type [S1(POS)]
x Run VGABIOS if S3 Resume Auto
Power Management [User Define]
Video Off Method [DPMS]
Video Off In Suspend [Yes]
Suspend Type [Stop Grant]
Suspend Mode [Disabled]
HDD Power Down [Disabled]
Soft-Off by PWR-BTTN [Instant-Off]
Wake-Up by PCI card [Disabled]
Power On by Ring [Disabled]
x USB KB Wake-UP From S3 Disabled
Resume by Alarm [Disabled]
x Date(of Month) Alarm 0
x Time(hh:mm:ss) Alarm 0 : 0 : 0
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ PCI Express PM Function

Press <Enter> to select “Wake-up by LAN” Enabled/Disabled.


Phoenix – AwardBIOS CMOS Setup Utility
PCI Express PM Function
Wake-up by LAN
[Disabled]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ ACPI Function

Select ACPI (Advanced Configuration and Power Management) Enabled/Disabled.

☐ ACPI Suspend Type

Select S1(POS)/S3(STR).

☐ Power Management

Select power saving type.

☐ **Video Off Method**

There are three methods,
Blank Screen: Writes blanks to the video buffer.
V/H SYNC + Blank: Turn off the vertical and horizontal sync. ports and write blanks to the video buffer.
DPMS: The DPMS (Display Power Management Signaling) allows BIOS control the video display.

☐ **Video Off In Suspend**

Select Video On/Off during suspend state.

☐ **Suspend Type**

There are two types,
Stop Grant: CPU goes into idle mode during suspend state.
PwrOn Suspend: CPU and system remain powered on during suspend state.

☐ **Suspend Mode**

Select system inactivity time, all devices except the CPU will be shut off.

☐ **HDD Power Down**

Select time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

☐ **Soft-Off by PWR-BTTN**

Select power button function,
Instant-off: Press power button will power off instantly.
Delay 4 Sec: Press power button 4 second to power off.

☐ **Wake-Up by PCI card**

Select Wake-UP by PCI device Enabled/Disabled.

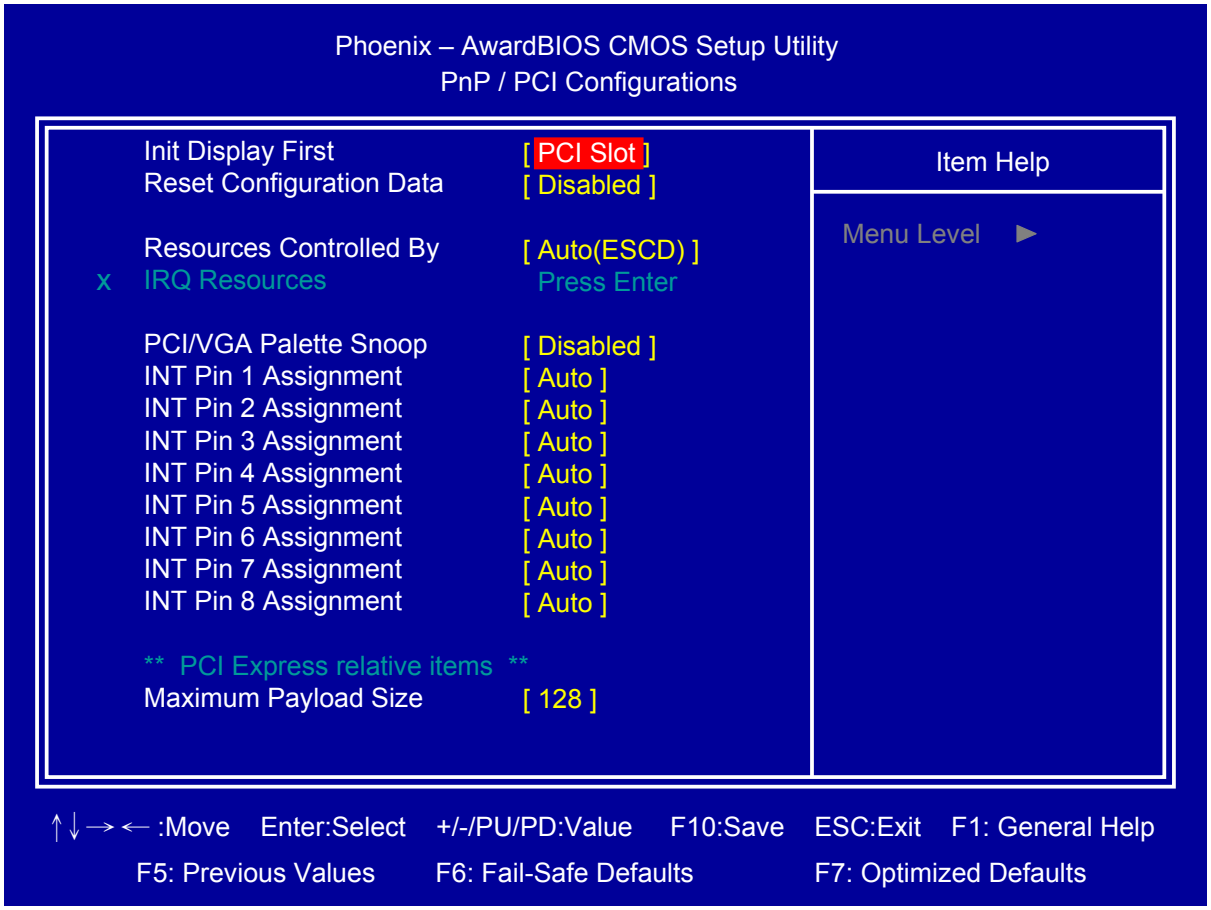
☐ **Power On by Ring**

Select Power on by Ring Indicator signal from Modem.

☐ **Resume by Alarm**

Set date and time to power on system from soft-off state.

2.7 PnP/PCI Configurations


Phoenix – AwardBIOS CMOS Setup Utility
PnP / PCI Configurations
Init Display First [PCI Slot]
Reset Configuration Data [Disabled]
Resources Controlled By [Auto(ESCD)]
x IRQ Resources Press Enter
PCI/VGA Palette Snoop [Disabled]
INT Pin 1 Assignment [Auto]
INT Pin 2 Assignment [Auto]
INT Pin 3 Assignment [Auto]
INT Pin 4 Assignment [Auto]
INT Pin 5 Assignment [Auto]
INT Pin 6 Assignment [Auto]
INT Pin 7 Assignment [Auto]
INT Pin 8 Assignment [Auto]
** PCI Express relative items **
Maximum Payload Size [128]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ Init Display First

Select initial display by PCI or Onboard device.

☐ Reset Configuration Data

Select Enabled to reset Extended System Configuration Data (ESCD) when you exit BIOS setup utility, if you have installed new add-on card and the system reconfiguration has caused such a serious conflict that the OS cannot boot.

☐ Resources Controlled By

BIOS can automatically configure all the boot and Plug and Play compatible devices. If you choose Auto, you cannot select IRQ DMA and memory base address fields, since BIOS automatically assigns them.

☐ PCI/VGA Palette Snoop

Select PCI/VGA Palette Snoop Enabled/Disabled.

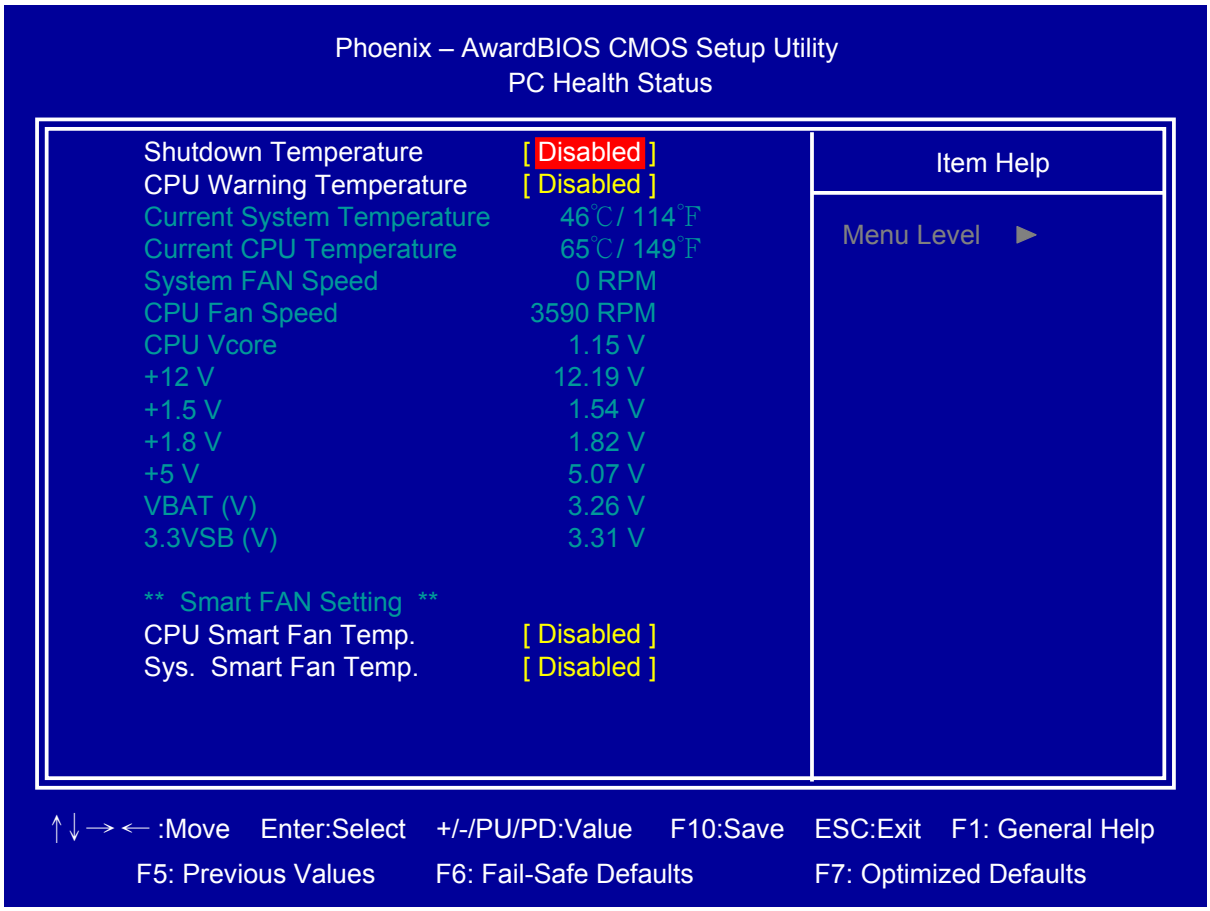
☐ **INT Pin 1/2/3/4/5/6/7/8 Assignment**

Select automatically or manual assigned INT to device.

☐ **Maximum Payload Size**

Setup maximum payload size for PCI Express devices.

2.8 PC Health Status


Phoenix – AwardBIOS CMOS Setup Utility
PC Health Status
Shutdown Temperature [Disabled]
CPU Warning Temperature [Disabled]
Current System Temperature 46℃/ 114℉
Current CPU Temperature 65℃/ 149℉
System FAN Speed 0 RPM
CPU Fan Speed 3590 RPM
CPU Vcore 1.15 V
+12 V 12.19 V
+1.5 V 1.54 V
+1.8 V 1.82 V
+5 V 5.07 V
VBAT (V) 3.26 V
3.3VSB (V) 3.31 V
** Smart FAN Setting **
CPU Smart Fan Temp. [Disabled]
Sys. Smart Fan Temp. [Disabled]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ **Shutdown Temperature**

If CPU temperature reaches the setting value will automatic shutdown system.

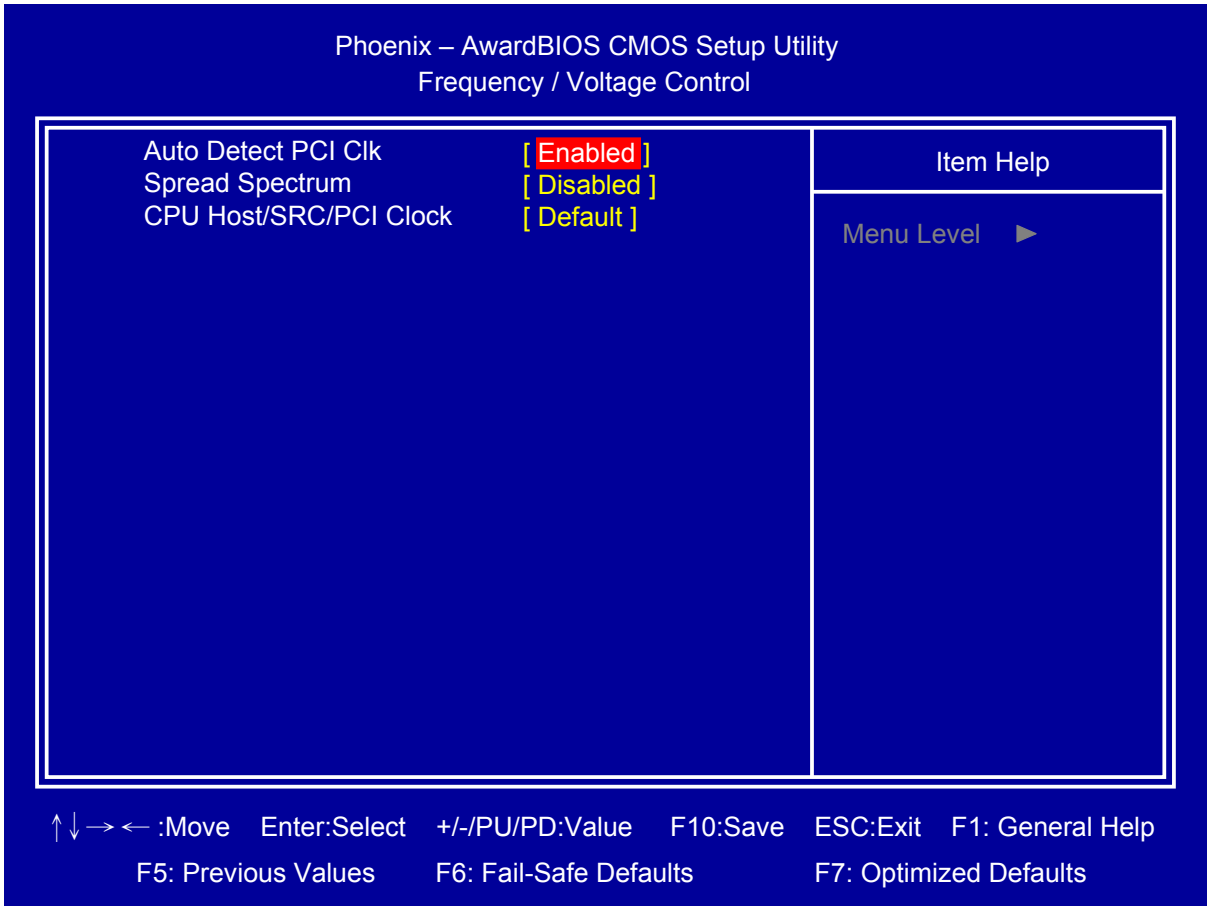
☐ **CPU Warning Temperature**

If CPU temperature reaches the setting value will beep in DOS mode.

☐ **CPU/Sys. Smart Fan Temp.**

Setup CPU/System Smart FAN temperature.

2.9 Frequency/Voltage Control


Phoenix – AwardBIOS CMOS Setup Utility
Frequency / Voltage Control
Auto Detect PCI Clk
Spread Spectrum
CPU Host/SRC/PCI Clock
[Enabled]
[Disabled]
[Default]
Item Help
Menu Level ►
↑↓→← :Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

☐ **Auto Detect PCI Clk**

Select “Auto Detect PCI Clk” Enabled/Disabled

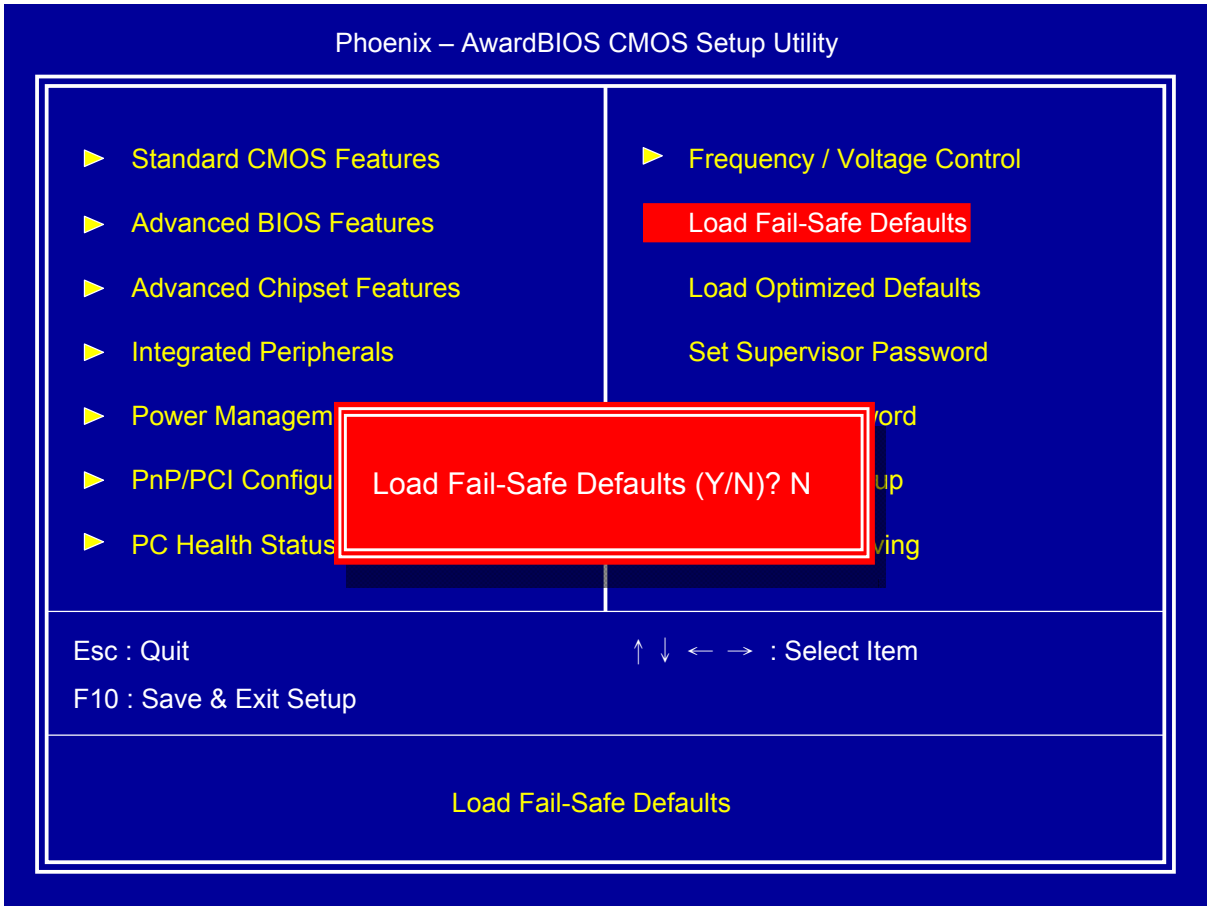
☐ **Spread Spectrum**

Select “Spread Spectrum” Enabled/Disabled.

☐ **CPU Host/SRC/PCI Clock**

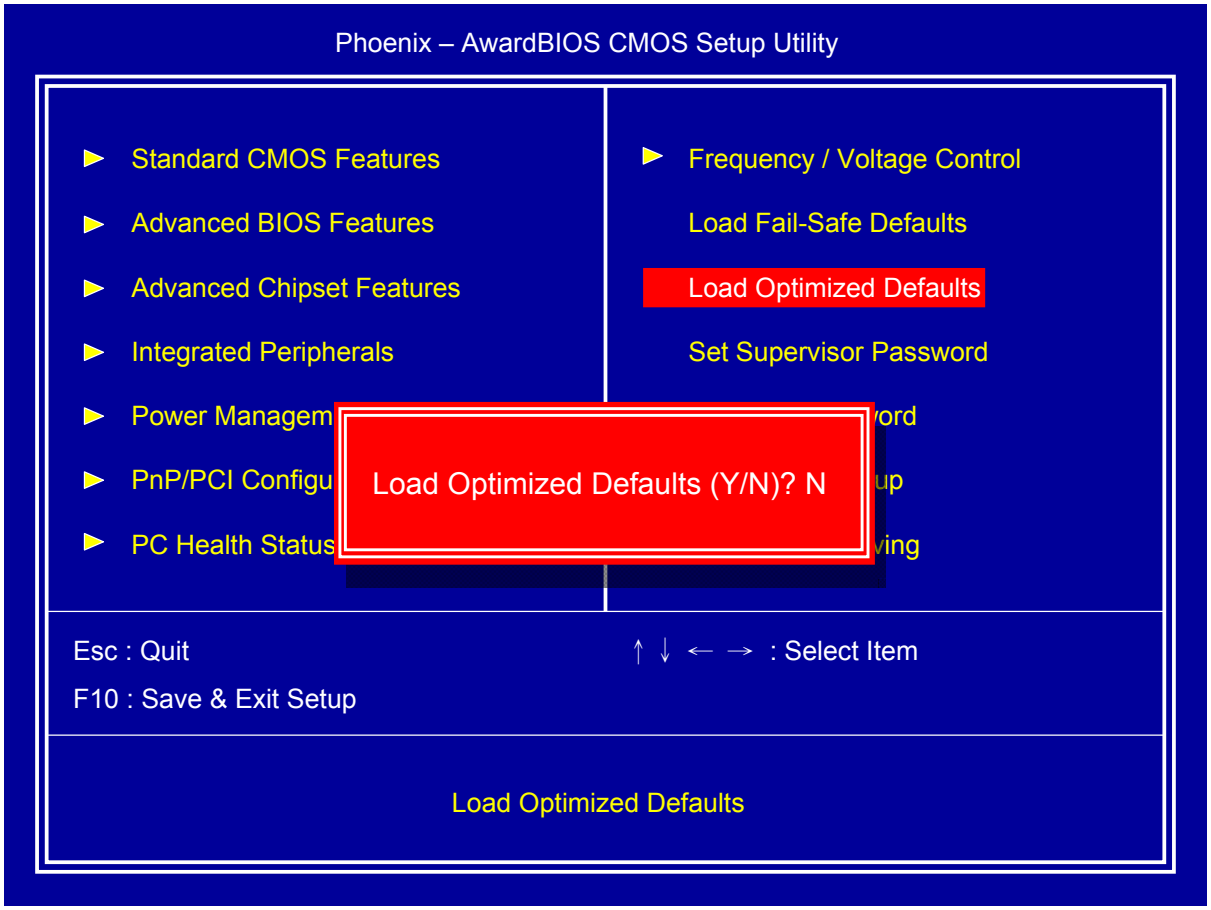
Select “CPU Host/SRC/PCI Clock” are default or others setting.

2.10 Load Fail-Safe Defaults



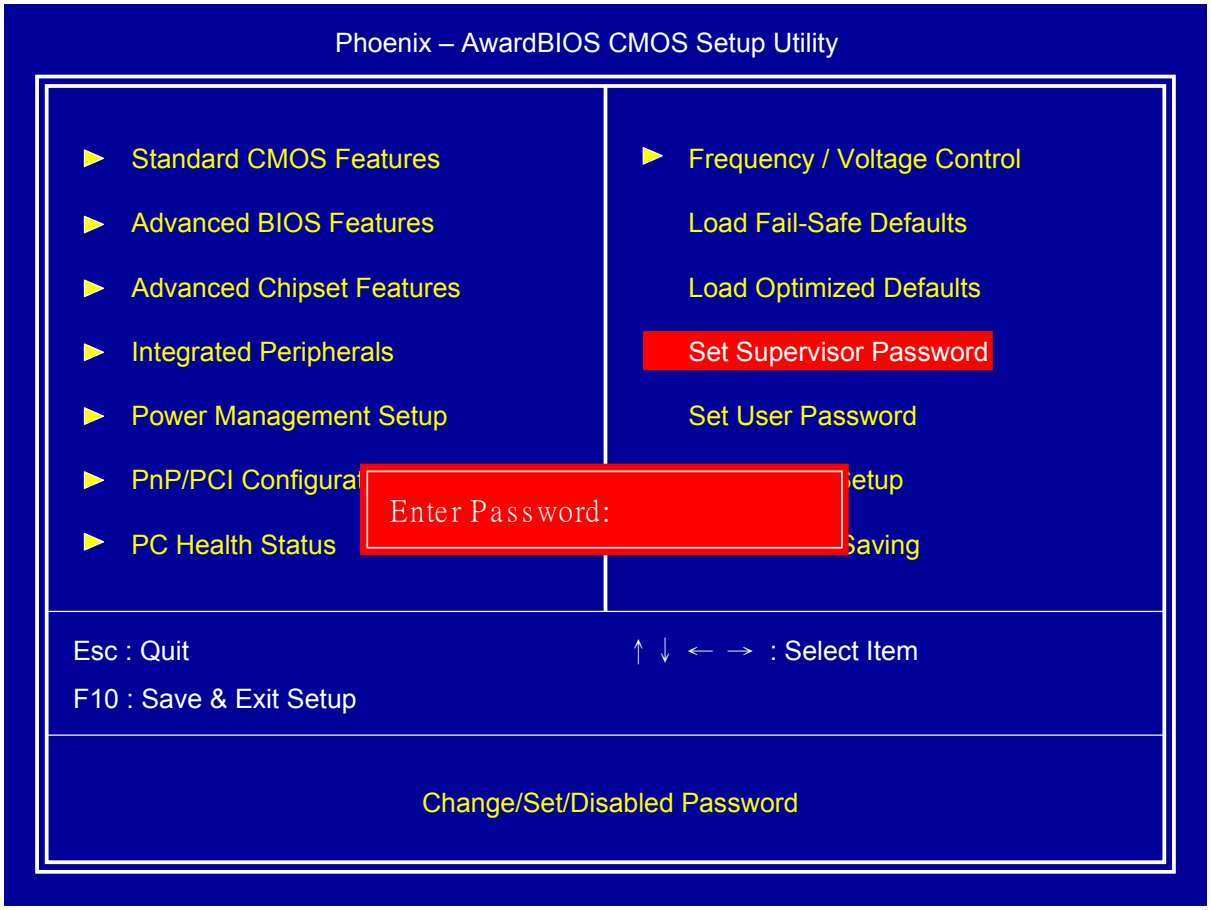
This item will set configuration for non optimized system operation.

2.11 Load Optimized Defaults



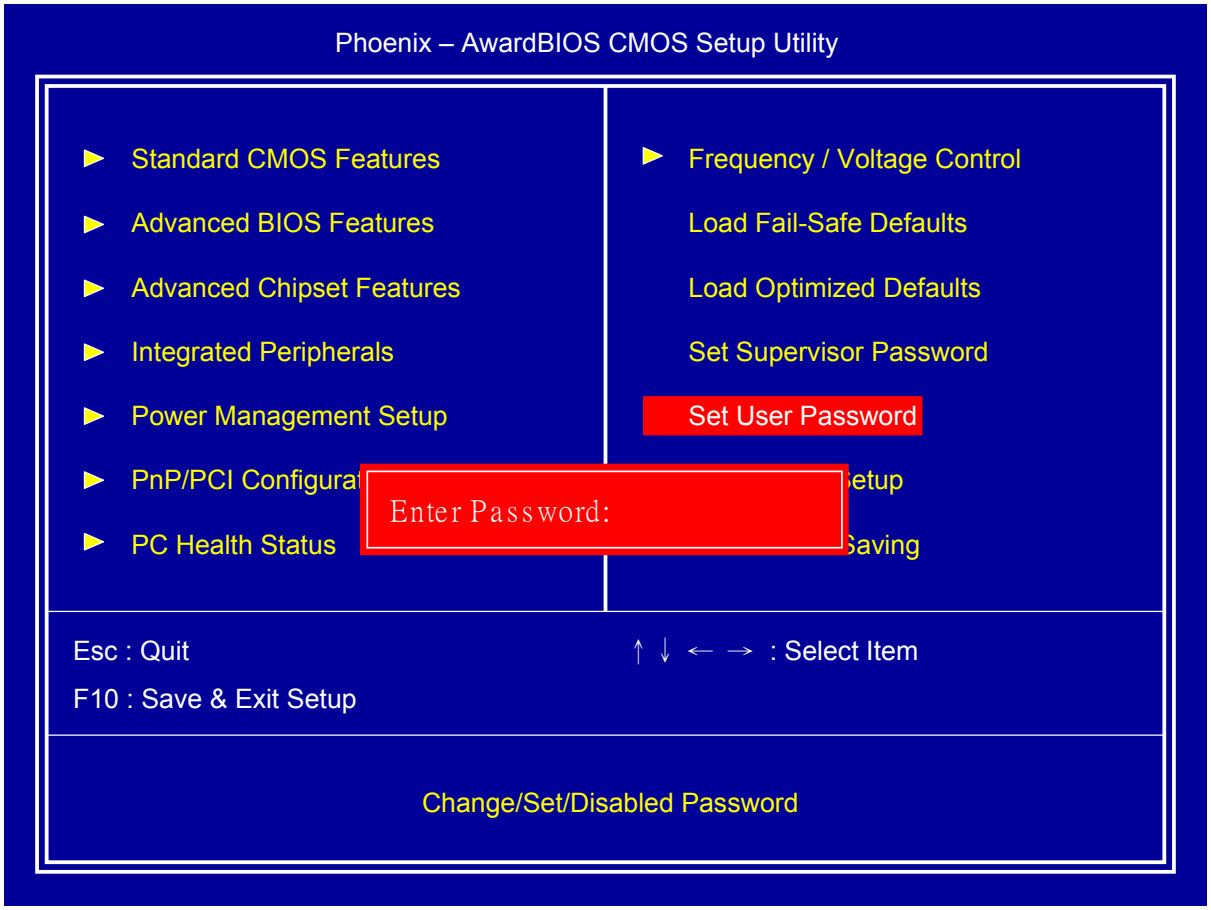
This item will restore factory default setting for optimized system operation.

2.12 Set Supervisor Password



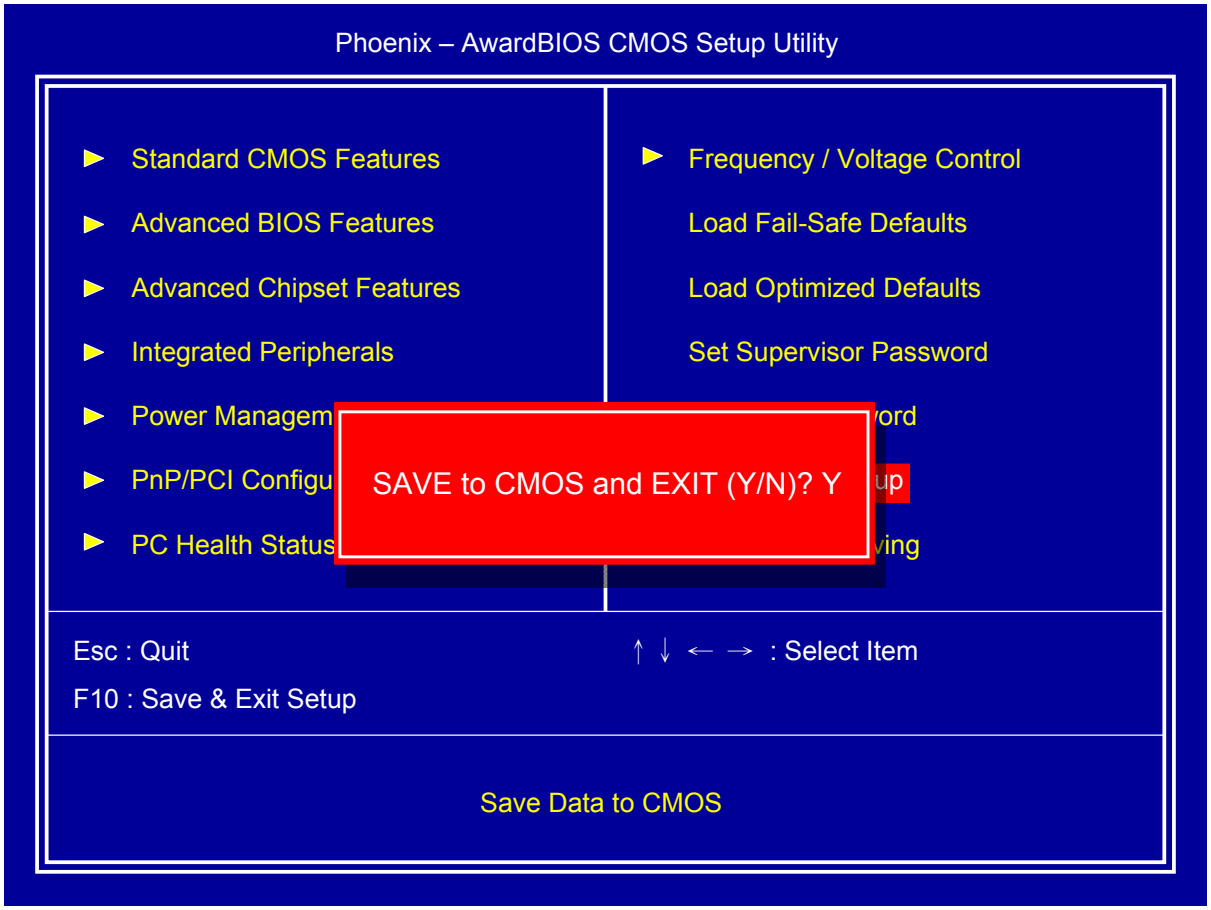
If set supervisor password, it will request typing password to enter BIOS setup utility.

2.13 Set User Password



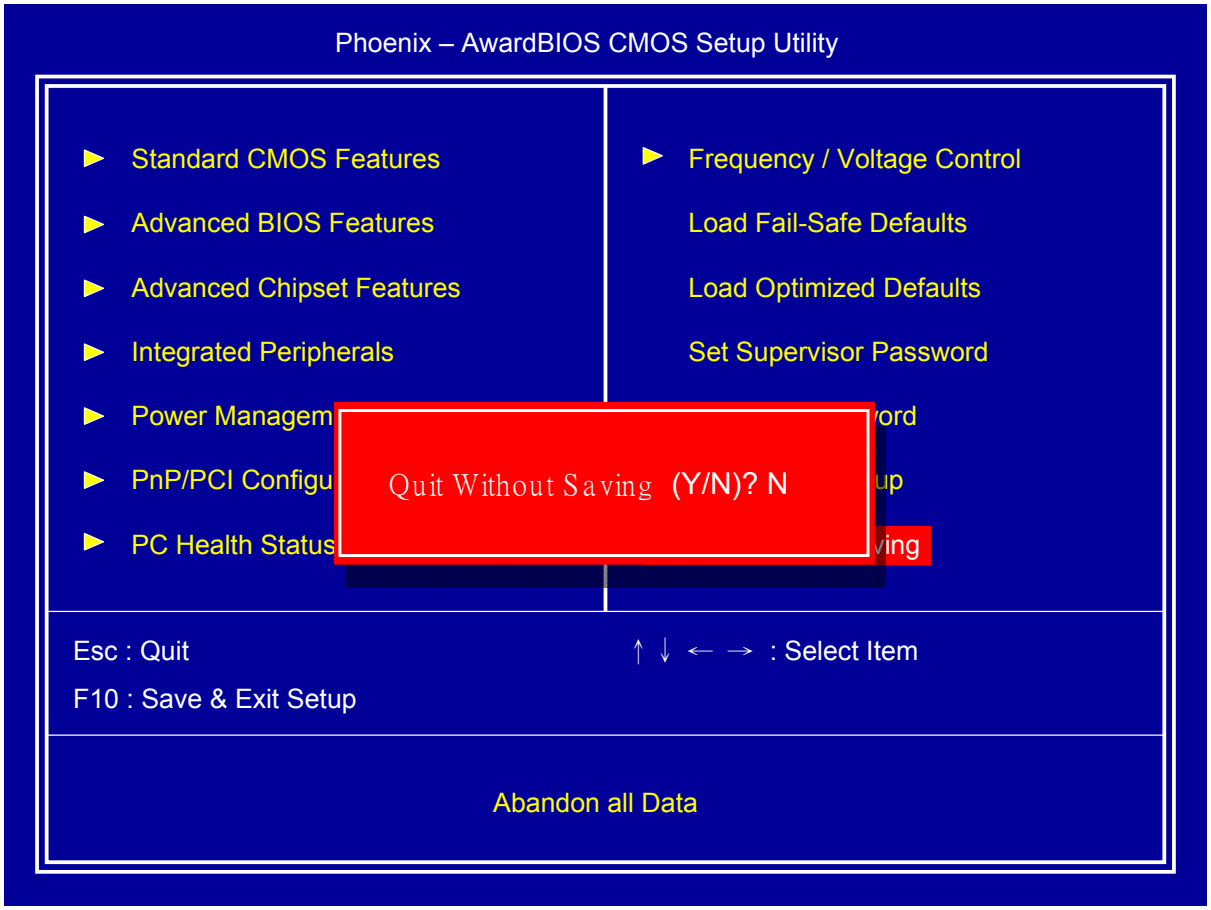
After set user password it will request to enter password before enter BIOS setup utility and modify any configuration.

2.14 Save & Exit Setup



This item confirm save configuration or not before exit BIOS setup utility,
Press <Y> and <Enter> to save configuration, then reboot system.
Press <N> and <Enter> will back to BIOS setup utility.

2.15 Exit Without Saving



This item confirm save configuration or not before quit BIOS setup utility,
Press <Y> and <Enter> will not save configuration, then reboot system.
Press <N> and <Enter> will back to BIOS setup utility.

Chapter 3 Drivers Installation

This chapter introduces driver installation information.

Please insert the utility CD to CD-ROM drive, the install menu will appear automatically, if the install menu did not list suitable driver of Operate System or did not appear automatically, please select corresponding driver of utility CD to install.

The Windows XP driver installation steps are as below.

3.1 Intel Chipset Device Software

Step 1. Click “Next” to continue

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

Step 2. Read the License Agreement and click “Yes” to continue

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Step 3. Click “Next” to continue

Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
* Product: Intel(R) Chipset Device Software
* Release: Production Version
* Version: 9.0.0.1008
* Target Chipset#: Intel(R) 4 Series Chipset
* Date: May 01 2008
< Back
Next >
Cancel
Intel® Installation Framework

Step 4. Click “Next” to continue

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) ICH9 Family USB Universal Host Controller - 2939
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293A
Version: 8.3.0.1011
Installing Driver: Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C
Version: 8.3.0.1011
Installing Driver: Mobile Intel(R) 45 Express Chipset Series Processor to DRAM Controller - 2A
Version: 8.7.0.1007
Click Next to continue.
Next
Intel® Installation Framework

Step 5. Click “Finish” to complete setup

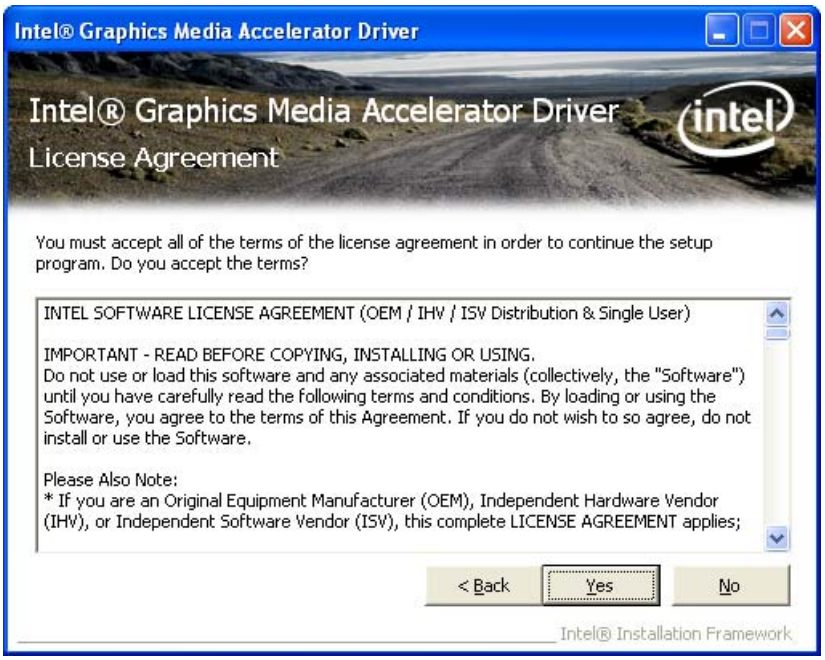
Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

3.2 Intel Graphic Media Accelerator Driver

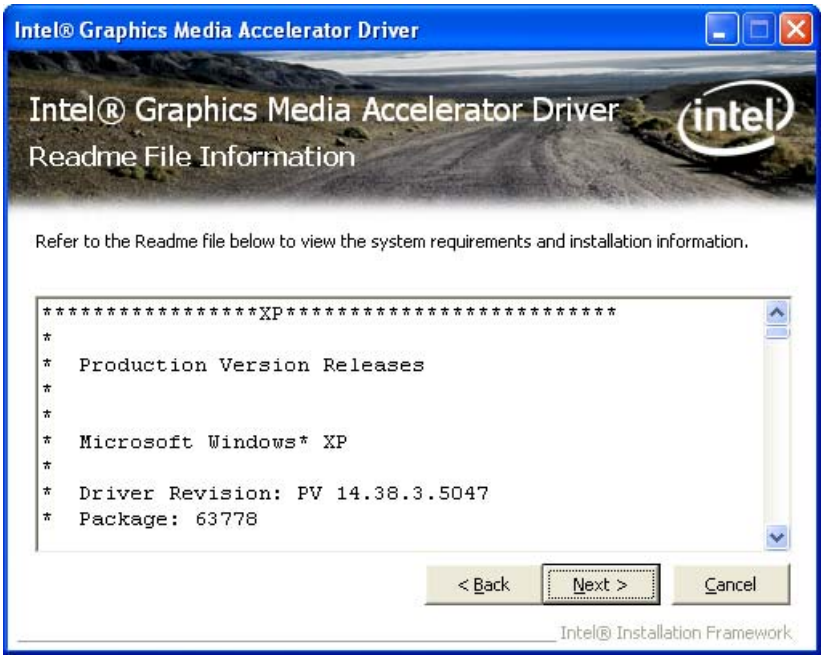
Step 1. Click “Next” to continue

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel
Welcome to the Setup Program
This setup program will install the Intel® Graphics Media Accelerator Driver onto this computer. It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

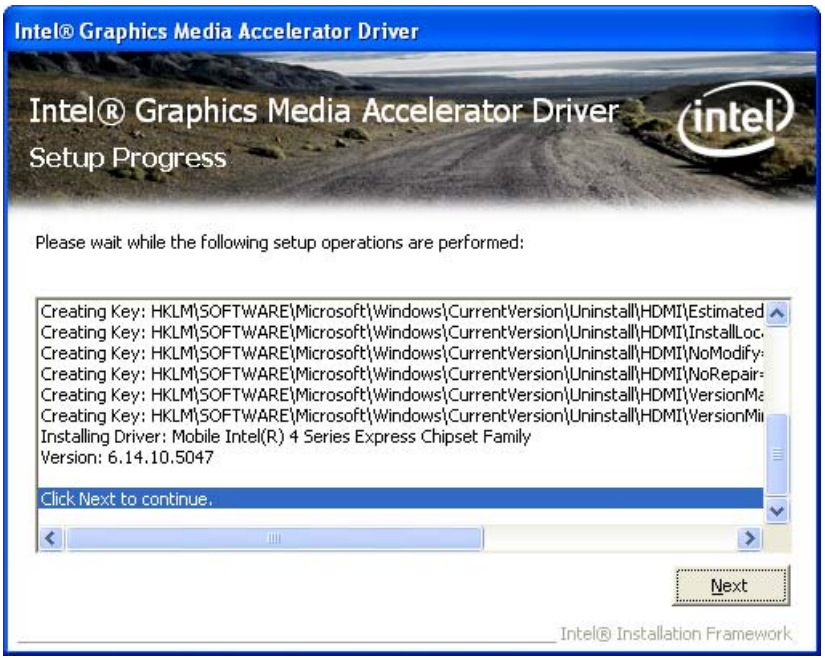
Step 2. Read the License Agreement and click “Yes” to continue


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Step 3. Click “Next” to continue


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
**********XP**********
* Production Version Releases
* Microsoft Windows* XP
* Driver Revision: PV 14.38.3.5047
* Package: 63778
< Back
Next >
Cancel
Intel® Installation Framework

Step 4. Click “Next” to continue

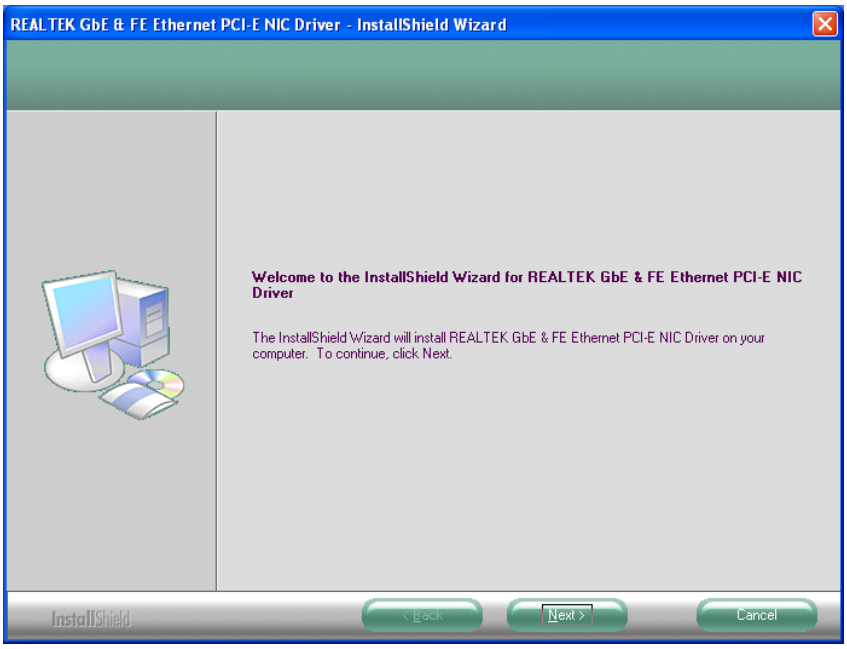


Step 5. Click “Finish” to complete setup

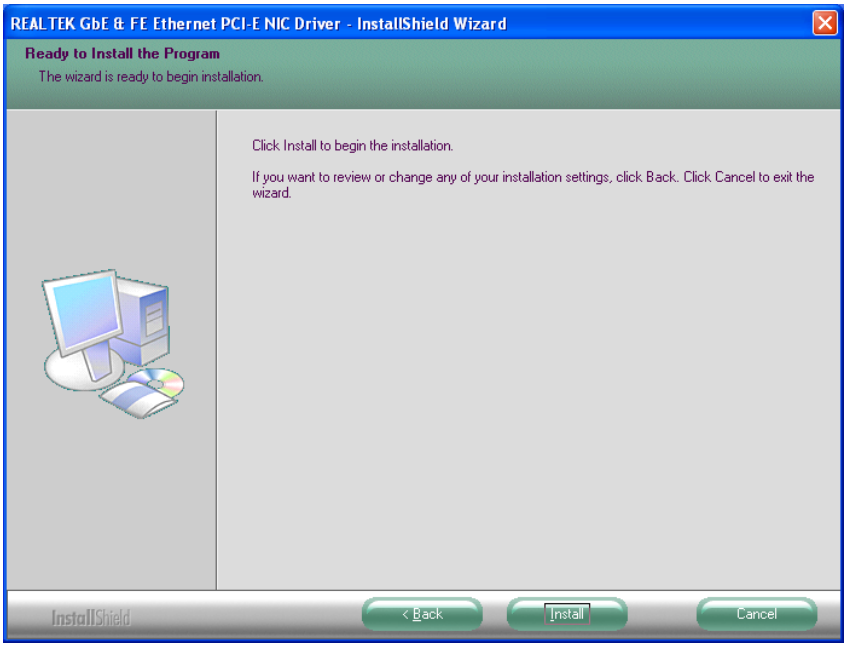
Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

3.3 LAN Driver

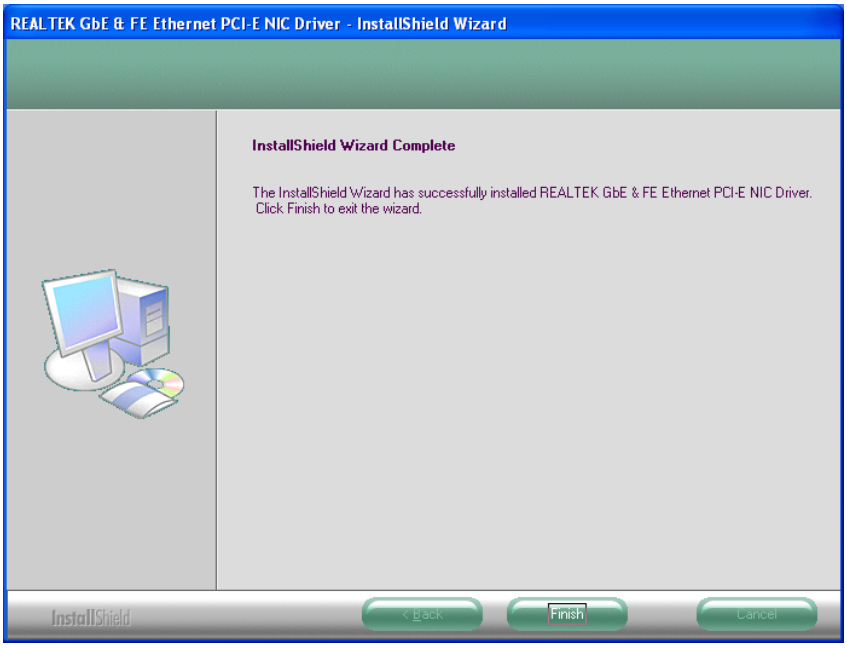
Step 1. Click “Next” to continue


REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Welcome to the InstallShield Wizard for REALTEK GbE & FE Ethernet PCI-E NIC Driver
The InstallShield Wizard will install REALTEK GbE & FE Ethernet PCI-E NIC Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Step 2. Click “Install” to continue

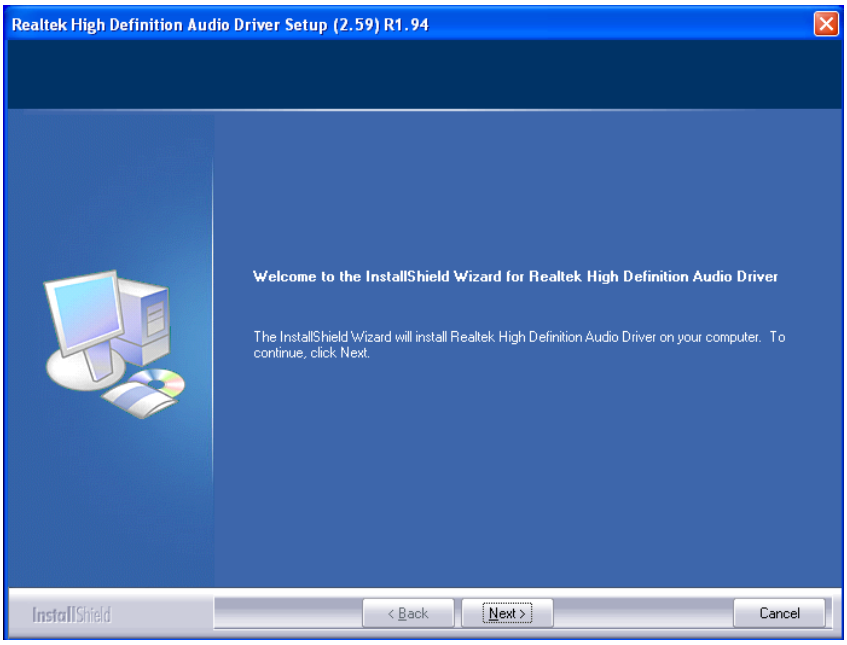

REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
InstallShield
< Back
Install
Cancel

Step 3. Click “Finish” to complete setup

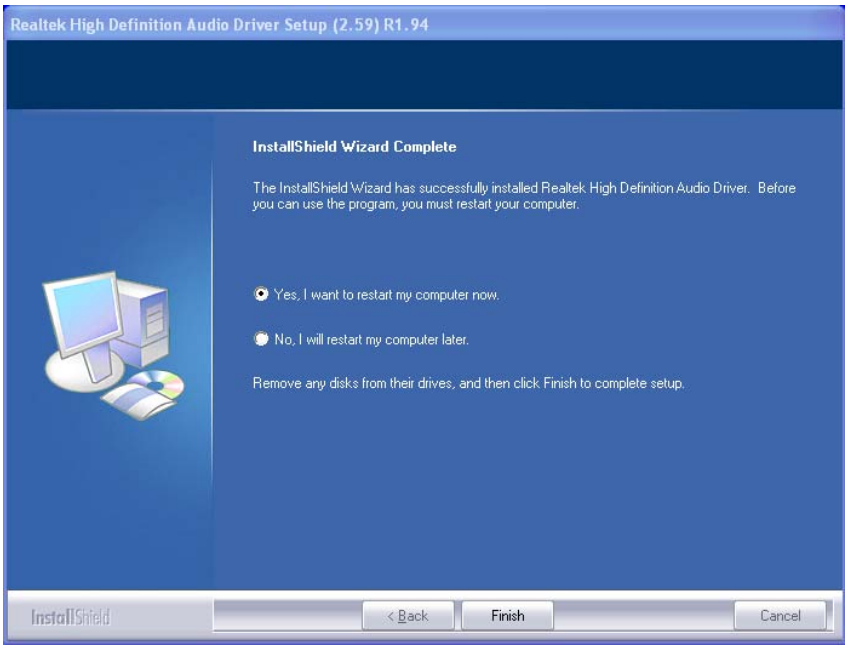

REALTEK GbE & FE Ethernet PCI-E NIC Driver - InstallShield Wizard
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed REALTEK GbE & FE Ethernet PCI-E NIC Driver. Click Finish to exit the wizard.
InstallShield
< Back
Finish
Cancel

3.4 Audio Driver

Step 1. Click “Next” to continue


Realtek High Definition Audio Driver Setup (2.59) R1.94
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Step 2. Click “Finish” to complete setup

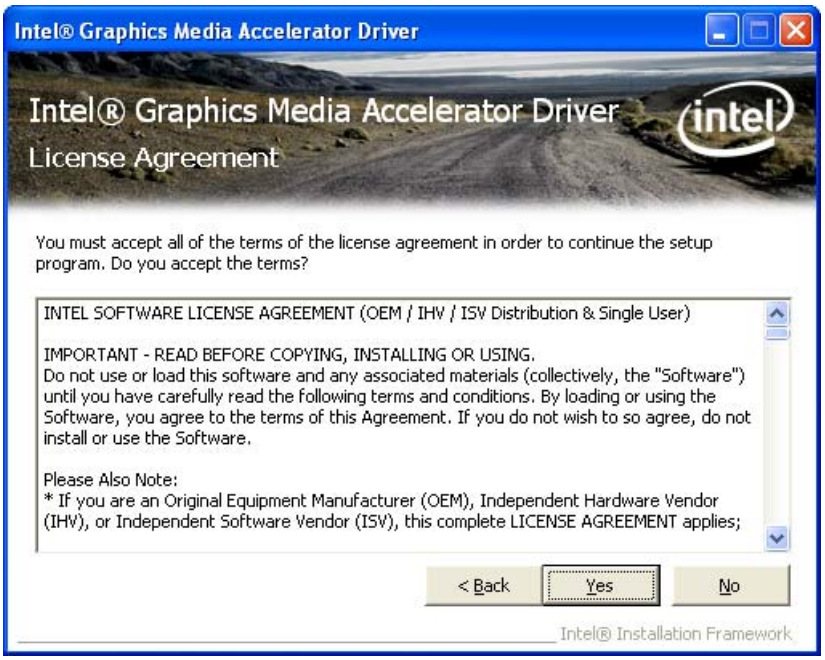

Realtek High Definition Audio Driver Setup (2.59) R1.94
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

3.5 Intel High Definition Audio HDMI Driver

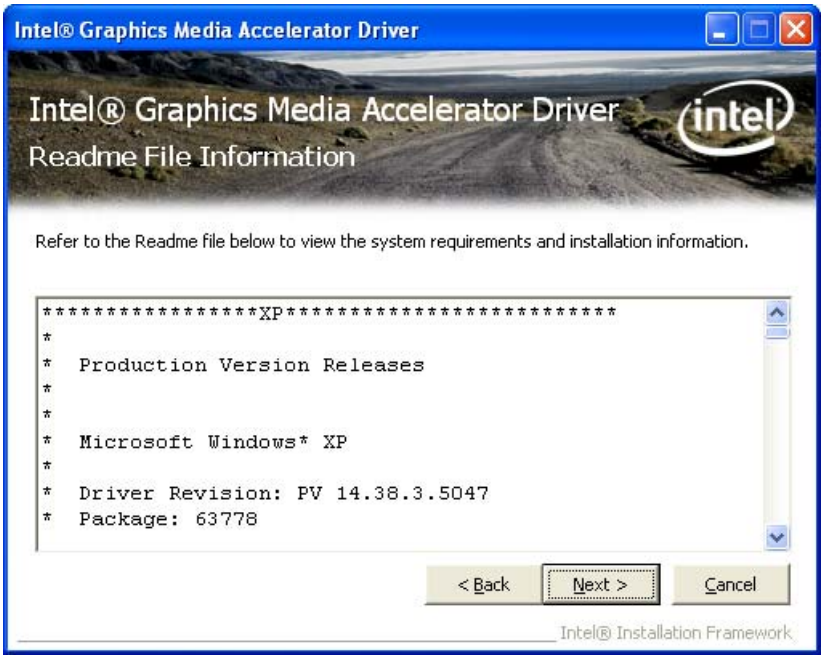
Step 1. Click “Next” to continue

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
intel
Welcome to the Setup Program
This setup program will install the following software onto this computer:
- Intel® Graphics Media Accelerator Driver
- Intel® High Definition Audio HDMI Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

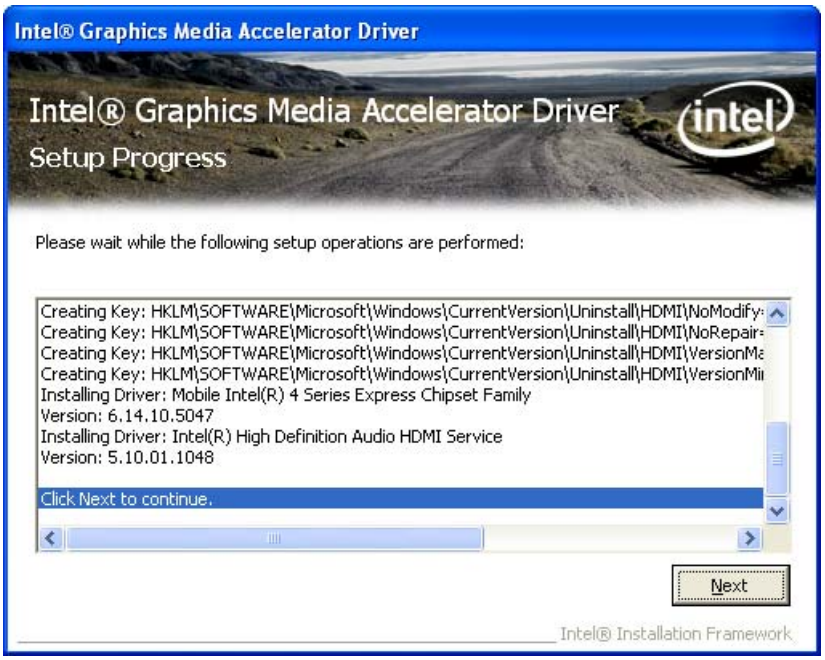
Step 2. Read the License Agreement and click “Yes” to continue


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Step 3. Click “Next” to continue


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
**********XP**********
* Production Version Releases
* Microsoft Windows* XP
* Driver Revision: PV 14.38.3.5047
* Package: 63778
< Back
Next >
Cancel
Intel® Installation Framework

Step 4. Click “Next” to continue


Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Progress
Please wait while the following setup operations are performed:
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoModify
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\NoRepair
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\VersionMa
Creating Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI\VersionMi
Installing Driver: Mobile Intel(R) 4 Series Express Chipset Family
Version: 6.14.10.5047
Installing Driver: Intel(R) High Definition Audio HDMI Service
Version: 5.10.01.1048
Click Next to continue.
Next
Intel® Installation Framework

Step 5. Click “Finish” to complete setup

Intel® Graphics Media Accelerator Driver
Intel® Graphics Media Accelerator Driver
Setup Is Complete
intel
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Appendix-A Watchdog

The system board provides Watchdog function, the Super I/O setting step as below.

Step 1: CR2D, Bit0→0 (select pin77 to WDTO#)
Step 2: LD8, CR30, Bit0→1 (Active WDTO#)
Step 3: LD8, CRF7, Bit4→Write 0 to clear WDTO# status.
Step 4: LD8, CRF5, Bit3→0: Second mode, 1: Minute mode
Step 5: LD8, CRF6, Bit [7:0] →Set WDTO# Time out value. (WDTO# startup after setting the system time, or setup from step 3 ~ step 5 to restart WDT.)

Appendix-B GPIO

The system board provides input and output ports that can be individually configured to perform a simple basic I/O function. Users can configure each individual port to become an input or output port by programming register bit of I/O selection. To invert port value, the setting of Inversion Register has to be made. Port values can be set to read or write through Data Register.

Please refer previous chapter for pin define description.

Access Cash Drawer GPIO Programming Guide

There are two PNP I/O port addresses that can be used to configure GPIO ports,

(1). 0x2E - **EFER** (Extended Function Enable Register, for entering Extended Function Mode)
- **EFIR** (Extended Function Index Register, for identifying CR index number)

(2). 0x2F - **EFDR** (Extended Function Data Register, for accessing desired CR)

Below are some example codes for demonstrate GPIO function.

// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin121-128 to be GPIO port 1
outp(0x002E, 0x29);
outp(0x002F, inp(0x002F) | 0x01);

// Select Logic Device 7
outp(0x002E, 0x07);
outp(0x002F, 0x07);

// Active Logic Device 7
outp(0x002E, 0x30);
outp(0x002F, 0x01);

// Select Inversion Mode
outp(0x002E, 0xF2);
outp(0x002F, 0x83);

// Select I/O Mode
// Bit0~bit3 output and bit4~bit7 input
outp(0x002E, 0xF1);
outp(0x002F, 0x00);

// Access GPIO ports
outp(0x002E, 0xF0);
outp(0x002F, 0x7C);

// Exit Extended Function Mode
outp(0x002E, 0xAA);

Definitions of Variables:
Each bit in the lower nibble of each Register represents the setting of a GPIO port.
Bit0 vs. GPIO DIO-Out 0
Bit1 vs. GPIO DIO-Out 1
Bit7 vs. GPIO DIO-Out 3
Bit4 vs. GPIO DIO-In 0
Bit3 vs. GPIO DIO-In 3

Value of **Inversion Register:**
Only lower nibble is available for this function.
When set to a ‘1’, the incoming/outgoing port value is inverted.
When set to a ‘0’, the incoming/outgoing port value is the same as in Data Register.

Value of **I/O Selection Register:**
Only lower nibble is available for this function.
When set to a ‘1’, respective GPIO port is programmed as an input port.
When set to a ‘0’, respective GPIO port is programmed as an output port.

Value of **Output Data / Input Data:**
Only lower nibble is available for this function.
If a port is assigned to be an output port, then its respective bit can be read/write.
If a port is assigned to be an input port, then its respective bit can be read only.

Note:
Some other functions may occupy the high nibble of the registers. Altering any content in high nibble will be undesired.